Better Homes and Gardens®

# WOOD®

THE #1 MAGAZINE FOR HOME WOODWORKERS

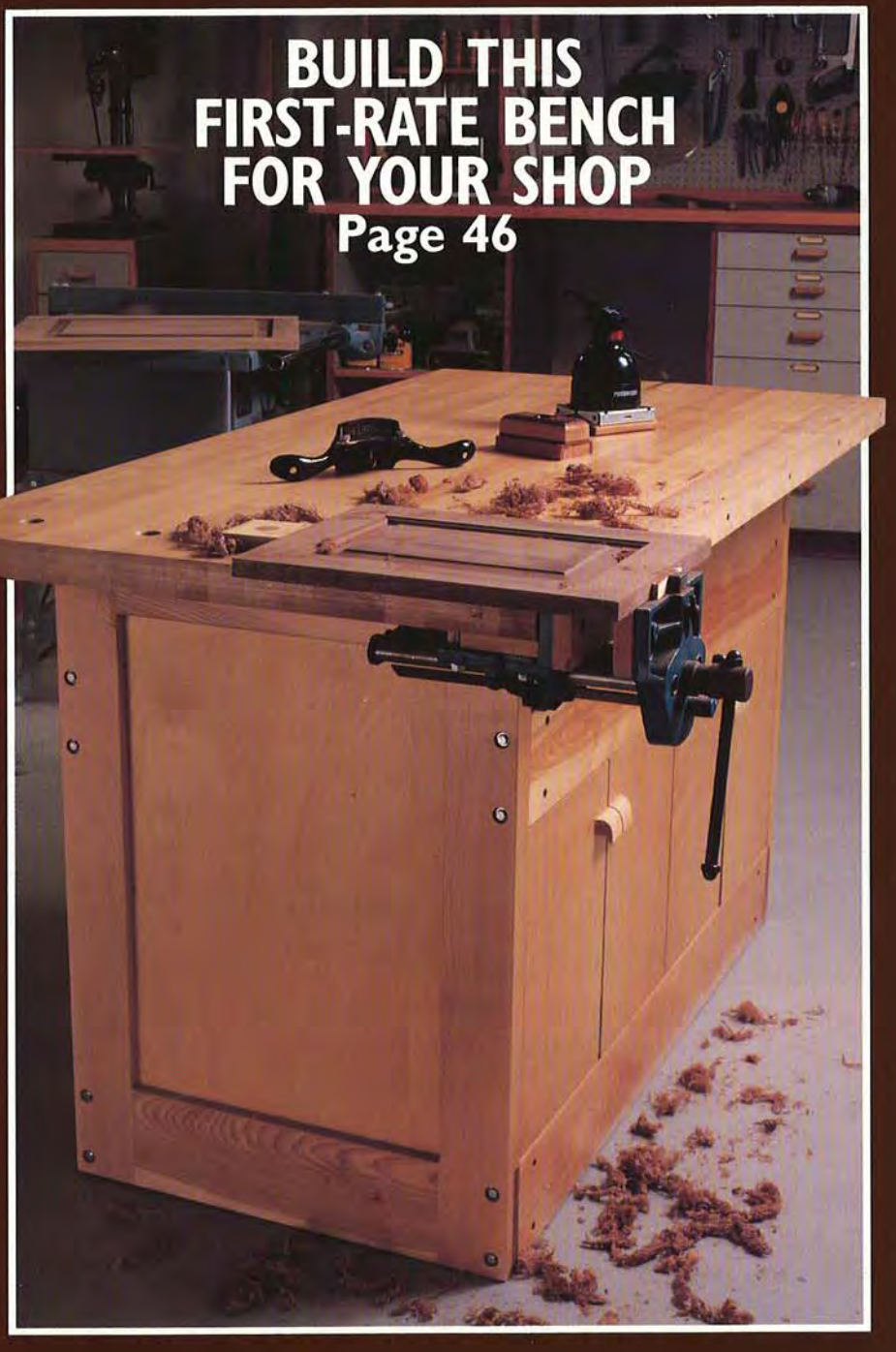
SEPTEMBER 1990 • ISSUE NO. 37
Display until September 11

**1990 BUILD-A-TOY™ CONTEST WINNERS**
See page 54

**LOG TO LUMBER**
Machine found wood into usable stock

**CRAFT A CLASSIC 4" TRY SQUARE**
for less than $4

**PLEASING PROJECTS**
Toy tractor
Toddler's learning board
Turned weed pots
Scrollsawed necklace
Carved coyote



**BUILD THIS FIRST-RATE BENCH FOR YOUR SHOP**
Page 46

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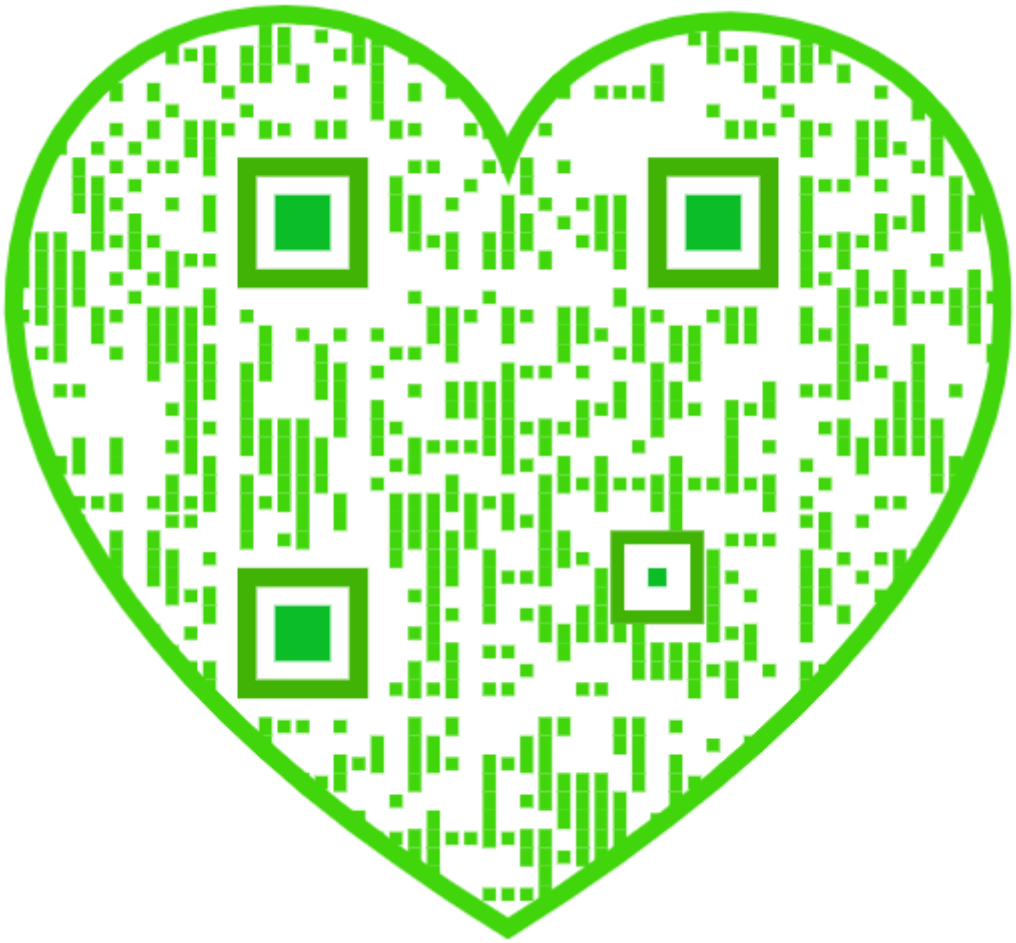

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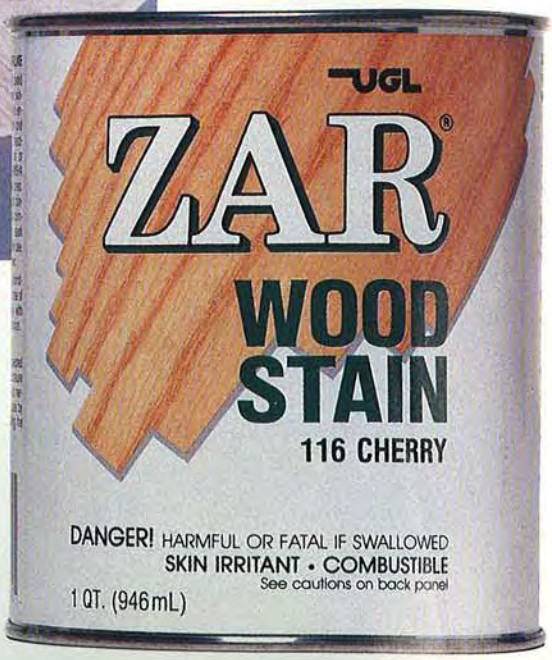


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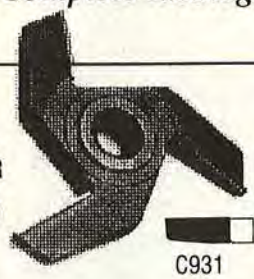

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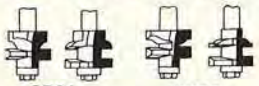

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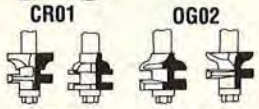

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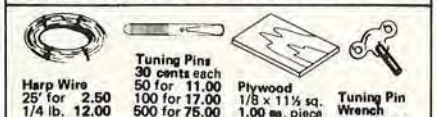

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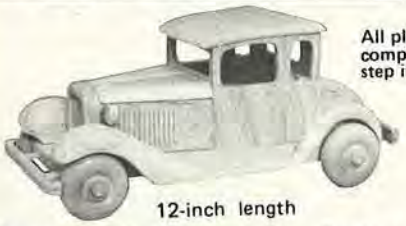

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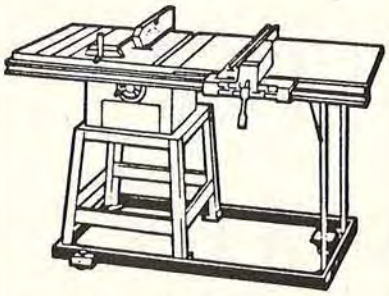

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# WOOD®

THE #1 MAGAZINE FOR HOME WOODWORKERS

*This issue's cover wood grain: yellow birch*

SEPTEMBER 1990 ISSUE NO. 37



WOOD PROFILE
**Cottonwood: The Great Plains' guidepost** 31
During the westward expansion, a cottonwood grove signaled nearby water. Today, the same wood means good lumber at a great price.

COLLECTOR'S EDITION
**Pocket-sized try square** 33
You can pay a lot more if you want, but here's a homemade tool that gets the job done in fine style . . . for about $4.

CRAFTSMAN CLOSE-UP
**New Mexico mountain menagerie** 36
From Los Angeles to New York, galleries clamor for the cottonwood creatures Max Alvarex sculpts in his studio near Santa Fe.

**Warm up to Southwest** 40
What's all the fuss about Southwest designs, anyway? Read why some experts think this style will be around for years to come.

TOOL BUYMANSHIP
**Woodworking vises** 42
A good woodworking vise should last a lifetime—or two. To help you purchase wisely, we tested 18 models in our shop.

**Labor-of-love workbench** 46
This design from *WOOD* magazine has it all: a simple-to-build base, three worktop suggestions, optional doors and drawers, a bench-dog-and-vise system, plus a nifty panel jack. And, it disassembles easily.

BUILD-A-TOY™ CONTEST
**And the winners are . . .** 54
. . . kids across the U.S. Thanks to a good-hearted core of readers, we will give 580 terrific handmade toys to the Toys for Tots program.

**Blue-ribbon tractor** 56
Our judges fell in love with Jack Rowland's blemish-free finish, and we think you'll like his down-to-earth design, too.

## Board of education 58

We know you'll enjoy building and giving this toy. It teaches colors and shapes.

SHOP-TESTED TECHNIQUES

## Transform found wood into usable stock 60

Come with *WOOD* magazine staff members as they learn how to transform a downed tree into top-grade stock for their own shops.

## Turned weed pots 64

Join Rus Hurt, a professional woodworker from Wisconsin, and follow along at his side for a fail-safe turning lesson.

## The lowdown on Asian plywood 68

Thanks to a reader tip, we now have information to pass along about paper-thin hardwood veneers that barely cover imported plywood.

## How safe are your woodworking habits? 70

Let's see how quickly you recognize dangerous woodworking situations we set up in our shop. Hope you pass the test with flying colors!

## The lure of the laser 74

Adding laser details to wood can really dress up a project. Here's your chance to learn how easily craftsmen accomplish the task.

WOODEN NECKLACE

## Autumn delight 76

Whip up this design on your scrollsaw just in time for someone's favorite fall outfits.

DEVELOP YOUR SHOP SKILLS

## Router basics 77

Don't miss these five basic tips that will help you make better use of your router.

CARVING PATTERN

## Carve a coyote 78

Max Alvarez, the same carver featured on page 36, shares the pattern for one of his hottest-sellers. Then, carve our howling friend in one of two sizes.

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|---|---|---|---|---|---|---|---|
| #601 | Solid Carbide | 1/8" Spiral Cutter | *Proper Adaptor Will Be Supplied | 1/8" | 1/2" | 1/4" * | $ 9.00 |
| #602 | | 3/16" Spiral Cutter | | 3/16" | 5/8" | 1/4" * | $12.00 |
| #603 | | 1/4" Spiral Cutter | | 1/4" | 3/4" | 1/4" | $12.00 |
| #903 | | 1/4" Spiral Cutter | | 1/4" | 3/4" | 1/2" * | $12.00 |
| #904 | | 3/8" Spiral Cutter | | 3/8" | 1" | 1/2" * | $24.00 |
| #905 | | 1/2" Spiral Cutter | | 1/2" | 1 1/2" | 1/2" | $29.00 |
| #350 | | 1/8" Round Over | 1/8" R | 3/4" | 3/8" | 1/4" | $11.00 |
| #351 | | 3/16" Round Over | 3/16" R | 7/8" | 1/2" | 1/4" | $11.00 |
| #230 | | 1/4" Round Over | 1/4" R | 1" | 1/2" | 1/4" | $12.00 |
| #353 | | 5/16" Round Over | 5/16" R | 1 1/8" | 1/2" | 1/4" | $14.00 |
| #209 | | 3/8" Round Over | 3/8" R | 1 1/4" | 5/8" | 1/4" | $15.00 |
| #355 | | 1/2" Round Over | 1/2" R | " | 3/4" | 1/4" | $17.00 |
| #656 | | 3/4" Round Over | 3/4" R | | 7/8" | 1/2" | $21.00 |
| #199 | | Multiform Moulding | Unlimited Patterns | 2 1/4" | 2" | 1/2" | $40.00 |
| #340 | | 1/8" Cove | 1/8" R | 5/8" | 3/8" | 1/4" | $12.00 |
| #205 | | 1/4" Cove | 1/4" R | 1" | 1/2" | 1/4" | $12.00 |
| #206 | | 3/8" Cove | 3/8" R | 1 1/4" | 9/16" | 1/4" | $13.00 |
| #207 | | 1/2" Cove | 1/2" R | 1 1/2" | 5/8" | 1/4" | $14.00 |
| #208 | | 3/4" Cove | 3/4" R | 1 7/8" | 3/4" | 1/2" | $26.00 |
| #460 | | 1/4" Bull Nose | 1/4" Dia. of Circle | | 3/8" | 1/4" | $14.00 |
| #461 | | 3/8" Bull Nose | 3/8" Dia. of Circle | | 3/4" | 1/4" | $15.00 |
| #462 | | 1/2" Bull Nose | 1/2" Dia. of Circle | | 7/8" | 1/4" | $16.00 |
| #464 | | 3/4" Bull Nose | 3/4" Dia. of Circle | | 1 1/8" | 1/4" | $19.00 |
| #506 | | 1/2" Pattern | Flush Trim | 1/2" | 1" | 1/4" | $15.00 |
| #507 | | 5/8" Pattern | Flush Trim | 5/8" | 1" | 1/4" | $16.00 |
| #508 | | 3/4" Pattern | Flush Trim | 3/4" | 1" | 1/4" | $17.00 |
| #366 | | 1/8" Slot Cutter | 3/8" Deep | 1 1/4" | 1/8" | 1/4" | $14.00 |
| #368 | | 1/4" Slot Cutter | 3/8" Deep | 1 1/4" | 1/4" | 1/4" | $14.00 |
| #204 | | 3/8" Rabbeting | 3/8" Deep | 1 1/4" | 1/2" | 1/4" | $13.00 |

| ITEM NO. | BEST CUT BEST PRICE | DESCRIPTION | ANGLE/DEPTH/RADIUS CIRCLE DIAMETER | LARGE DIA. | CUTTING LENGTH | SHANK SIZE | PRICE |
|---|---|---|---|---|---|---|---|
| #210 | | 1/4" Core Box | round nose | 1/4" | 1/4" | 1/4" | $ 9.00 |
| #211 | | 3/8" Core Box | round nose | 3/8" | 3/8" | 1/4" | $10.00 |
| #212 | | 1/2" Core Box | round nose | 1/2" | 11/32" | 1/4" | $13.00 |
| #418 | | 3/4" Core Box | round nose | 3/4" | 5/8" | 1/4" | $15.00 |
| #213 | | 1" Core Box | round nose | 1" | 3/4" | 1/2" | $17.00 |
| #214 | | 1/4" Straight | plunge cutting | 1/4" | 3/4" | 1/4" | $ 6.50 |
| #215 | | 5/16" Straight | plunge cutting | 5/16" | 1" | 1/4" | $ 6.50 |
| #216 | | 3/8" Straight | plunge cutting | 3/8" | 1" | 1/4" | $ 6.50 |
| #217 | | 7/16" Straight | plunge cutting | 7/16" | 1" | 1/4" | $ 6.50 |
| #474 | | 1/2" Straight | plunge cutting | 1/2" | 1" | 1/4" | $ 7.00 |
| #775 | | 1/2" Straight | plunge cutting | 1/2" | 2" | 1/2" | $14.00 |
| #218 | | 5/8" Straight | plunge cutting | 5/8" | 1" | 1/4" | $ 7.00 |
| #219 | | 3/4" Straight | plunge cutting | 3/4" | 1" | 1/4" | $ 9.50 |
| #220 | | 1" Straight | plunge cutting | 1" | 1 1/2" | 1/2" | $11.00 |
| #500 | | 3/8" Flush Trimming | | 3/8" | 1/2" | 1/4" | $ 7.00 |
| #502 | | 1/2" Flush Trimming | | 1/2" | 1/2" | 1/4" | $ 7.50 |
| #503 | | 1/2" Flush Trimming | | 1/2" | 1" | 1/4" | $ 8.50 |
| #221 | | 1/2" Flush Trimming | | 1/2" | 1 3/16" | 1/2" | $ 8.00 |
| #545 | | Tongue & Groove | Straight | 1 5/8" | 1" | 1/4" | $29.00 |
| #845 | | Tongue & Groove | Straight | 1 5/8" | 1" | 1/2" | $29.00 |
| #546 | | Tongue & Groove | Wedge | 1 3/16" | 1" | 1/4" | $29.00 |
| #846 | | Tongue & Groove | Wedge | 1 5/8" | 1" | 1/2" | $29.00 |
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| #451 | | 3/16" Beading | 3/16" R | 7/8" | 1/2" | 1/4" | $11.00 |
| #233 | | 1/4" Beading | 1/4" R | 1" | 1/2" | 1/4" | $13.00 |
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| #454 | | 3/8" Beading | 3/8" R | 1 1/4" | 5/8" | 1/4" | $15.50 |
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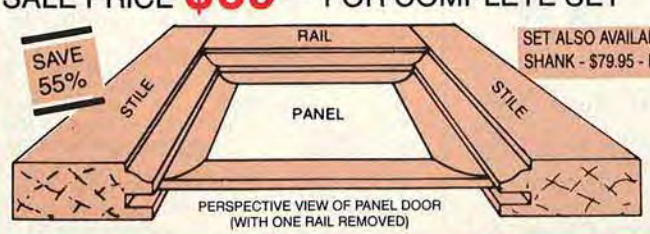


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# THE EDITOR'S ANGLE

The Prestigious

# WOODY A•W•A•R•D

## It Stands for Outstanding Effort

Every two months, shortly after you receive the current issue of *WOOD®* magazine, the staff and I get together in our conference room to appraise our latest effort. It's a time for us to share with one another which articles we think worked well both editorially and graphically and also to discuss things we would do differently next time around.

It's also the time when our managing editor Carl Voss and I announce the recipients of a Prestigious WOODY Award. We've been doing this for four years or so to recognize—in a small way—outstanding effort by members of the *WOOD* magazine team.

During this time, everyone on the staff has received several of them—for a particularly well-written article, a great project design, a terrific-looking layout, or some such accomplishment. But no one has hauled down more WOODYs than Perry McFarlin, the magazine's senior graphic designer,

who, along with Lee Gatzke, our art director, does a super job of designing and laying out each issue. That's Perry in the photo *above* with his 26 certificates.

Most WOODY Awards go to staff members—but not all. For example, I found out recently that reader Doyle McGinnis, *left,* an over-the-road truck driver from Hastings, Nebraska, had invested 280 hours in building 14 of the 1930 Ford wagons featured in the October 1989 issue. I just had to send him an award. Oh, by the way, if you happen to know any woodworkers who have done a lot of good for others using their woodworking skills, I'd sure like to hear from you about their accomplishments. There are plenty of WOODYs left to recognize outstanding effort.

Write to: The WOODY Award
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Larry Clayton


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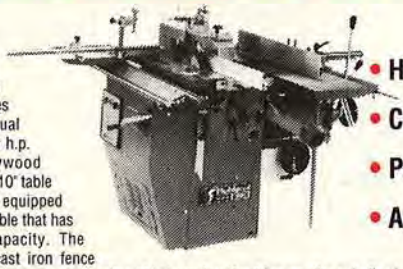

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# TALKING BACK

**We welcome comments, criticisms, suggestions, and even compliments. Send your correspondence to: Letters Editor, Better Homes and Gardens® *WOOD*® Magazine, P.O. Box 11454, Des Moines, IA 50336-1454.**

## Standing up for alder

First off, let me say thank-you for the hummingbird pattern in the April 1990 issue. To date, I've made 28 of these projects using alder and ash. I think you should add alder to your list of favorite hardwoods. It cuts and sands well, stains perfectly, and is free to us from the local mill. That's why I use alder for all my scrollsaw work. If any woodworkers travel through Longview, I'll be more than happy to load them up with alder!

*—Vern Feezell, Longview, Wash.*

*Thanks for the offer, Vern. Here's hoping you like having visitors. (Note: We featured alder in a "Wood Profile" in our February 1988 issue.)*

## Updates on our handscrew clamps

Our instructions for the collector's edition handscrew-clamp project in the June 1990 issue call for a 9/16" brad-point bit to drill the holes for the pivot nuts. If you have a problem locating a 9/16" bit, you can order a carbon-steel one with a ½" shank for $10 ppd. from: The Morris Wood Tool Company, P.O. Box 249, Morristown, TN 37815. Or, call 615/586-0110. Also, Leichtung's special price for the ppd. hand-screw hardware kits will remain in effect until Nov. 1, 1990.

## Reader solves a turning problem

I have worked on a project from your April 1989 issue—the turned acorn birdhouse. But no matter how careful I was, the drive spur from my lathe would tear and spin in the pine end grain. But then I found a cure for the problem.

I set the drive spur and dead center with a hammer, and then treated the immediate area of both ends with Minwax High Performance Wood Hardener as directed on the product label. After letting it set overnight, I turned the wren house the next day with no problems. This technique also keeps the dead center from wearing as quickly. The only drawback is the treated area won't take a stain.

I am a faithful subscriber and enjoy every issue of *WOOD* magazine.

*—George G. Linn, House Springs, Mo.*

Print this article

*Continued on page 10*

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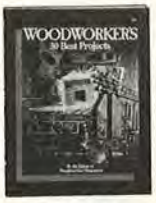


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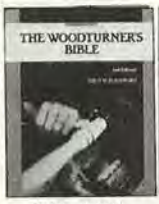


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| C1443 | 1/4" | 7/8" | 2" | $15 |

**1/2" SHANK**

| Part No. | DIA. | C.L. | O.L. | PRICE |
|---|---|---|---|---|
| C1446 | 3/8" | 1" | 3" | $30 |
| C1447 | 1/2" | 1-1/2" | 3" | $30 |

Due to the nature of Solid Carbide, these bits are not warranteed against breakage.

### Solid Carbide Straight — 2 Flutes

**1/4" SHANK**

| Part No. | DIA. | C.L. | O.L. | PRICE |
|---|---|---|---|---|
| NEW C1450 | 1/8" | 3/8" | 2" | $15 |
| NEW C1452 | 1/4" | 3/4" | 2" | $15 |

Due to the nature of Solid Carbide, these bits are not warranteed against breakage.

### Straight — Single Flute

**1/4" SHANK**

| Part No. | DIA. | C.L. | O.L. | PRICE |
|---|---|---|---|---|
| NEW C1471 | 1/8" | 3/8" | 1-3/4" | $12 |
| NEW C1472 | 5/32" | 3/8" | 1-3/4" | $12 |
| NEW C1473 | 3/16" | 3/8" | 1-3/4" | $12 |

Due to the nature of Solid Carbide, these bits are not warranteed against breakage.

Solid Carbide Tip

If you haven't used Solid Carbide then you're missing out.

### HSS (Cobalt) Roundnose — 2 Flutes

**1/4" SHANK**

| Part No. | DIA. | C.L. | O.L. | PRICE |
|---|---|---|---|---|
| NEW C1457 | 1/4" | 3/4" | 1-3/4" | $12 |

You'll place this bit next to your favorites!

### HSS Rough Cut

**1/4" SHANK**

| Part No. | DIA. | C.L. | O.L. | PRICE |
|---|---|---|---|---|
| NEW C1453 | 1/4" | 3/4" | 2" | $12 |

For Fiberglass, Plastics and other Phenolic materials.

### Solid Carbide Flush Trim Laminate Bit

**1/4" SHANK**

| Part No. | DIA. | C.L. | O.L. | PRICE |
|---|---|---|---|---|
| C1455 | 1/4" | 5/16" | 1-1/2" | $6 |

Works great in hand held laminate trimmers.

### Solid Carbide Bevel Trim Laminate Bit

**1/4" SHANK**

| Part No. | DIA. | C.L. | O.L. | PRICE |
|---|---|---|---|---|
| C1456 | 1/4" | 1/4" | 1-1/2" | $6 |

Works great in hand held laminate trimmers.

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90C-106A


# TALKING BACK

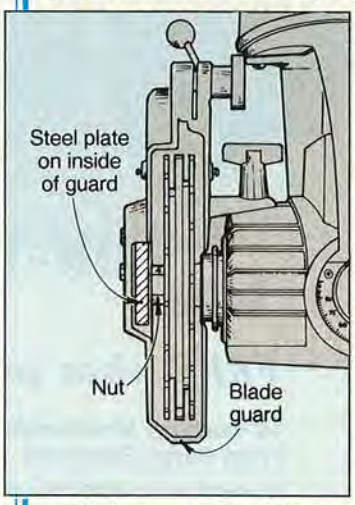
*Continued from page 8*

## Safety first: Radial-arm modification may save your life

A short time ago, I experienced an incident that could have inflicted serious—if not fatal—injury. Here's what happened:

The switch on my 30-year-old DeWalt radial-arm saw, wired for 220-volt service, was giving me some problems. I stood to the right of the machine, turning the switch off and on several times, when I heard a great noise. When I looked at the saw and then around my shop, I couldn't believe my eyes. Three blades from a dado set mounted in the saw were embedded in the wall of my shop—about 12' away from the saw! When I gathered my thoughts, I felt quite ill. I realized that if I had been standing in front of the saw, I would have been badly injured, maybe killed.

After inspecting the saw, I noticed that there was a gap of approximately 9/16" between the end of the shaft and the inside face of the guard—plenty of room for the arbor nut to drop off the shaft if it came loose. To ensure that this near catastrophe didn't happen again, I installed a section of steel plate on the inside face of the guard, leaving only 1/16" clearance between the end of the shaft and the steel plate.




It is my hope that someone will be saved from injury by recognizing the same condition on their saw and making the modification.

***Wilf Farrance, London, Ontario***

*Wilf, right in our backyard we have an expert on DeWalt saws. Chuck Wolfe, owner of Wolfe Machinery, has built a nationwide business of reconditioning DeWalt radial-arm saws. His company even recasts DeWalt parts for older models. As far as Chuck can tell, the accident you describe shouldn't have happened with a properly installed dado set and saw guard. He argues that a blade can't slip through the guard even if the nut falls off when an electrical malfunction reverses the motor. Chuck then showed us a newer DeWalt saw with a modified guard that minimizes the clearance between the blade shaft and guard—exactly what your steel insert accomplishes.*

*If you need more information about American-made DeWalt radial-arm saws, contact Wolfe Machinery, 6107 Merle Hay Road, Johnston, IA 50131. Phone 515/270-2766.*

*Continued on page 12*

# Super V-15" Scroll Saw with Variable Speed

**New!**

- *Dial any speed from 400 to 1800 cuts/min !*
- *Saws with similar features sell for over $700*
- *Special introductory price...*

*only* ***$189.95***

( item **#SVS**, UPS $10 )

***Cut intricate patterns in many different types of materials with this versatile machine. Purchase includes many FREE extras.***

This new model features a powerful, high quality **electronically controlled universal motor that gives full power and torque at all speeds.** Similar in design to our Super-15" model, the cutting action has been re-engineered to give smoother cutting and performance equal to saws many times the price.

**Dial any speed from 400 - 1800 cuts/min** to set the speed specifically for the job at hand. Use slower speeds for cutting plastics, metals and hardwoods.

***FREE ACCESSORIES:***

• **Dust blower** • 1 dz blades • EZ-Set permanent top-arm blade holder • 4 Standard blade holders • EZ Jig for attaching standard blade holders • Neptune 1-1/2" lettering guides w/6 patterns

**Specifications:**

- Motor: Universal motor w/electronic speed control. 110V, 1.3Amp, sealed ball bearings
- Speeds: 400 -1800 cuts/min
- Throat : 15" deep • Stroke - 3/4"
- Tilt : 0 - 45º left • Cut Depth: 2"
- Blades: accepts pin and plainend
- Construction - cast iron

## Scroll Saw Products

**Super 15" Scroll Saw**
Our most popular model. Same specs as Super V-15 model with single speed 1650 cpm motor, dust blower optional. Same free accessories as listed above.
**#SAW ... Only $119.95** (UPS $10)

**Dust Blower** (option for Super 15" saw)
**#BKT ..... $15.00/kit** ( • )

**Variable Speed Motor Upgrade**
Convert your saw to variable speed! This quality motor will fit our Super 15" model and other saws of similar design. Also fits Sears(tm)16", and "C" arm "Superscroll" styles - 18", 22", and 26" sizes. Limited 90 day warranty on non-Penn State saws.
**#SVM .....Only $99.00** (UPS $4)

**Magnifier Lamp**
Great for magnifying scroll work or closeup work of any kind.

•175% mag
•39" flex arm
• UL approved
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**#SML** (reg 29.95) **On Sale ...$22.95** (UPS $3)

**Scroll Saw Stand** ( On Sale)
34" High - the perfect height.
**#STD** .. (reg $39), **On Sale $26** (UPS $4)

**Foot Switch**
For hands free operation. Installs in line w/power cord. Easy hook-up. 7 amp, 6 ft
**#FSW ..... $20.00** ( • )

# Wood Lathe XL- 40

Reg $299.95, ***On Sale*** **$249.95**

Includes ***FREE*** 8 piece Wood Chisel Set ... **$34 Value**

**Our new XL-40 Wood Lathe surpasses every lathe in its price range with quality & features you would expect from machines many times its price . FEATURES .....**

**Heavy Duty** cast iron construction provides smooth turning action • **40" Centers** • **16" Swing** for turning larger bowls • Smooth toolrest movement on 1" solid steel rails • **"Live" center** on tailstock • **Motor mounted for easy positioning** and belt changes • **Sturdy 52" steel base** mounts on table top or optional stand.

**PURCHASE INCLUDES:**
• Lathe with Motor & Base • Toolrest • 6" Faceplate • 8 pc wood turning chisel set

**SPECIFICATIONS:**
- MOTOR: 1720 RPM, 1/2HP, 8AMP, 110V
- 3 Speeds: 660, 1500, 2850 RPM
- Headstock thread - 3/4" X 10 tpi
- Overall length: 60" - Weight : 100lbs

Item # **L40** .....***On Sale*** **$249.95** (UPS $20)

**Lathe Stand**
Heavy duty. Wt. 25Lbs
Size: 28"H X 56"L X 21" W
Item **#LST** .... **$44** /ea (UPS $6)

## Super 125 Planer

***On Sale .... $349.95***

**This machine will pay for itself time and again by planing your own wood. Finishes wood like machines many times its price.**

• **Portable** at 65 lbs • **Power feed** •12 1/2" wide High Speed Steel Knives Shipped assembled and ready to run.

**SPECIFICATIONS:**
Motor: 16Amp, 115V, 8000RPM, 2HP• 26.2 fpm auto feed rate • 16,000 Cuts/min • Thickness of stock: 3/16" - 6" • 1/8" Max depth of cut • 2 HSS knives
Item **#PLA** ..... **$349.95** (UPS $15)

## Planer Accessories

**Extra Set of 2 Knives**
High Speed steel, 12-1/2" long.
**Item #PKN .....$25.00/set** (•)

**Dust Chute**
For vacuum takeoff of wood chips.
**#PDS** ..(reg $24), **On Sale....$15** (UPS $3)

**Planer Stand** (Heavy duty)
Drilled for Super 125 Planer. 27-1/4"High.
**#PST** ...(Reg $44), **On Sale ..$39/ea** (UPS $6)

**Roller Stand**
HTC brand support stand w/heavy duty ball bearing roller. Height adjusts from 25" - 44".
**#PRS** ...(reg $40), **On Sale** ...**$35** (UPS $4)

**Ball Bearing Rollers**
(Minimum purchase 2 rollers). Build a roller stand, infeed/outfeed table etc. with these 13" X 2" Heavy Duty rollers. Inclues **FREE** plans for roller stand shown above.
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***New Model with 8" disc***

## Two way 4"x 8" Sander

***On Sale ...*** **$114.95** (UPS $8)
(Includes **$10 FREE** Belts & Discs)

Item #S48

**Here's a machine that adds true versatility to your shop.**

**New design uses universally available 8"** discs, 4" x 36" belts • Includes Assortment Of 3 Belts, 4 Discs Of Various Grits • **Built in Dust Collection** outlet • Aluminum table: tilts to allow bevel sanding to 45º, includes mitre gauge, movable for use with disc or belt • Belt tilts to any position from horizontal to vertical • **Quick release lever** for changing belts • **Single action tracking** adjustment • Motor 1/3HP, 1720RPM, 115V • Weight : 40Lbs

## DC-1 Dust Collector

(Includes $15 ***FREE*** Hose & Fittings)
***On Sale .. $189.95*** (UPS $20)

Item #DC1

**Keep your shop clean and safe from saw dust with this large capacity, commercial style system.**

**SPECIFICATIONS:**
1HP • 110/220V (pre-wired 110V)
• 610 CFM air flow • 2ea 20 gal bags
• 4" inlet •Castors on base • WT.: 75 lbs

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Dust collection hose • 4" to 3" rigid adaptor • 4" to 2" flex adaptor • Plans for 2 stage setup • Sources for accessories

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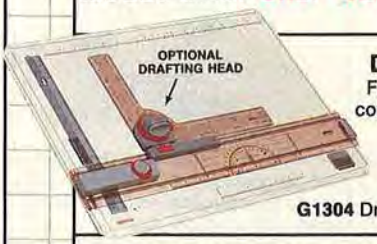


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# TALKING BACK

*Continued from page 10*

## Rash of bad luck with cocobolo

Concerning toxic wood . . . wow, was that article ever right! A friend shares his magazine with me, and I had read with interest the October 1989 article on making duck calls. My friend and I make a few calls for hunting buddies—I do most of the turning and my buddy does the tuning—and cocobolo was our choice of wood. For a while, that is.

Twice, within about a three-month interval, I turned some cocobolo and got a rash on my arms, neck, and chest like you wouldn't believe. The second time, I wore a face mask and long-sleeved shirt and taped the cuffs. I still got a bad rash.

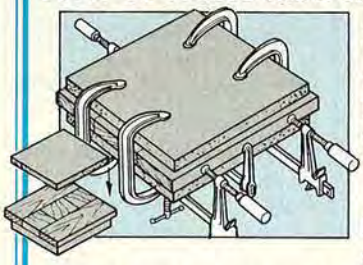
I had been thinking about writing to your magazine after reading the duck-call article and giving you a warning about cocobolo.

Another thing that might interest you is my buddy's experience with finishing some of the calls with tung oil. Once he was in a hurry to test-blow the call and the oil wasn't dry. He blew it quite a lot. The results were his losing all the skin on his lips. Webster's New World Dictionary says that tung oil is a yellow, poisonous oil.

I now intend to subscribe to *WOOD* magazine.

***—Herman H. Fasnacht, Pontiac, Ill.***

## How to locate hard-to-find books



After Paul Noel of Oak Harbor, Washington, read about two interesting—but out-of-print—woodturning books mentioned in the October 1989 "Talking Back," department, he asked his local library to check for the titles through the interlibrary loan system. Through his library, he was able to borrow *The Art of Polychromatic and Decorative Turning* from a Seattle library. The University of South Dakota Library in Brookings loaned him *Polychromatic Assembly for Woodturning.* Does this sound difficult? It's not, according to Paul.

"The services provided by the interlibrary loan system are not widely known or understood," he says. "Perhaps your readers would be interested."

Right. If you're a card-carrying library patron, you can ask your local librarian to inquire about borrowing titles from other libraries. Most systems allow the book to be checked out for two weeks. Normally, libraries don't charge for this service; however, your librarian may suggest that you help pay the postage/handling charge. In most cases, you can't renew (extend) the loan period.

*Continued on page 14*

# Your workshop can PAY OFF ...BIG!

**SAVE** ... convert low cost rough lumber for use in your home projects

***OR***

**EARN EXTRA INCOME** by supplying custom Planed Lumber, trim, and molding to lumberyards ... contractors ... cabinetmakers ... home hobbyists and others ...

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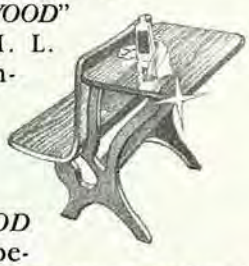
# TALKING BACK

*Continued from page 12*

## Indiana readers has his own finishing system



In his "Ask *WOOD*" advice to M. L. Metz on refinishing an oak school desk in the June 1989 issue of *WOOD* magazine, I believe Homer Formby prejudiced himself by the desire to sell his own product.

For the final finish, I would use a high-quality tung oil spar varnish instead of a polyurethane product. This would more nearly approximate the original finish. It should be a flat finish so that when rubbed out, the carved initials and gouges will not show up shiny. Thin the first coat by about one-third with a recommended thinner, and then lightly sand with #320 wet/dry paper. The second coat should be full-strength varnish, and rubbed out when dry with #400 or #600 wet/dry paper to remove surface irregularities. A final rub with 0000 steel wool followed by a good furniture wax will produce a beautiful luster and highly useful finish.

I have been doing this sort of work for more than 40 years, both as a hobbyist and professional. The system outlined here is simple and extremely practical.

***—John E. Hoover, Cambridge City, Ind.***

*Homer Formby replies, "I've been a fan of tung oil varnish for a long time. And, in fact, I would recommend a tung oil varnish for this school desk if it is going to be decorative, and not get a lot of use. I would apply tung oil varnish designed for hand rubbing, since spar varnish could be too thick if thinned improperly."*

## Big woodworking show hits Des Moines Sept. 13-16

Don't miss a great opportunity to see some of your favorite projects from *WOOD* magazine while you rub shoulders with top-notch craftsmen at the World's Fair of Woodworking in Des Moines. The show, open to the public, will be held September 13–16 at Veterans Memorial Auditorium. In addition, we will exhibit some of the best entries from our two toy competitions, including the Build-A-Toy winners featured on pages 54-55 of this issue. Speakers scheduled for the show include Sam Maloof, Tage Frid, Pietro Dinotti, Kelly Mehler, Rude Osolnik, Harley Refsal, Dale Nish, and Richard Raffan. The show also features about 100 exhibitors and a juried woodcarving show. For more information, call 800-441-0399 or 515/278-2126.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A boutique best-seller! Not only does it say "welcome" but it plays a Christmas melody with lights blinking in time to the rhythm. Tree is adorned with miniature ornaments.
#01570 Plans $4.00
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**"BABY" GRAND**
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#01079 Plans $6.95 #04079Z Plans & Parts Kit $11.95
Souvenir Shelf:
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Parts Kits include only necessary parts - no lumber. Additional kits without plans available at reduced rates.

**F-R-R-OSTY**
Put this character on your door or wall. Push his belly or nose and he plays "Frosty".
#01550 Plans - Belly $3.50
#04550Z Plans & Parts Kit $7.25
#01551 Plans - Nose 3.50
#01551Z Plans & Parts Kit $7.45

**RUDY**
Push his nose and he plays a Christmas Medley while lights in his horns blink in time with the music.
#01569 Plans $3.50
#04569Z Plans & Parts Kit $8.20

**PRANCER**
When you push his tail he plays "Rudolph" while his red light nose blinks in time with the music.
#01556N Plans $3.00
#01556NZ Plans & Parts Kit 7.25

**NURSERY BEAR**
Wow! This balloon laden forest critter plays 16 tunes! 2 movements play 4 each, the other plays 8 more. A great boutique seller.
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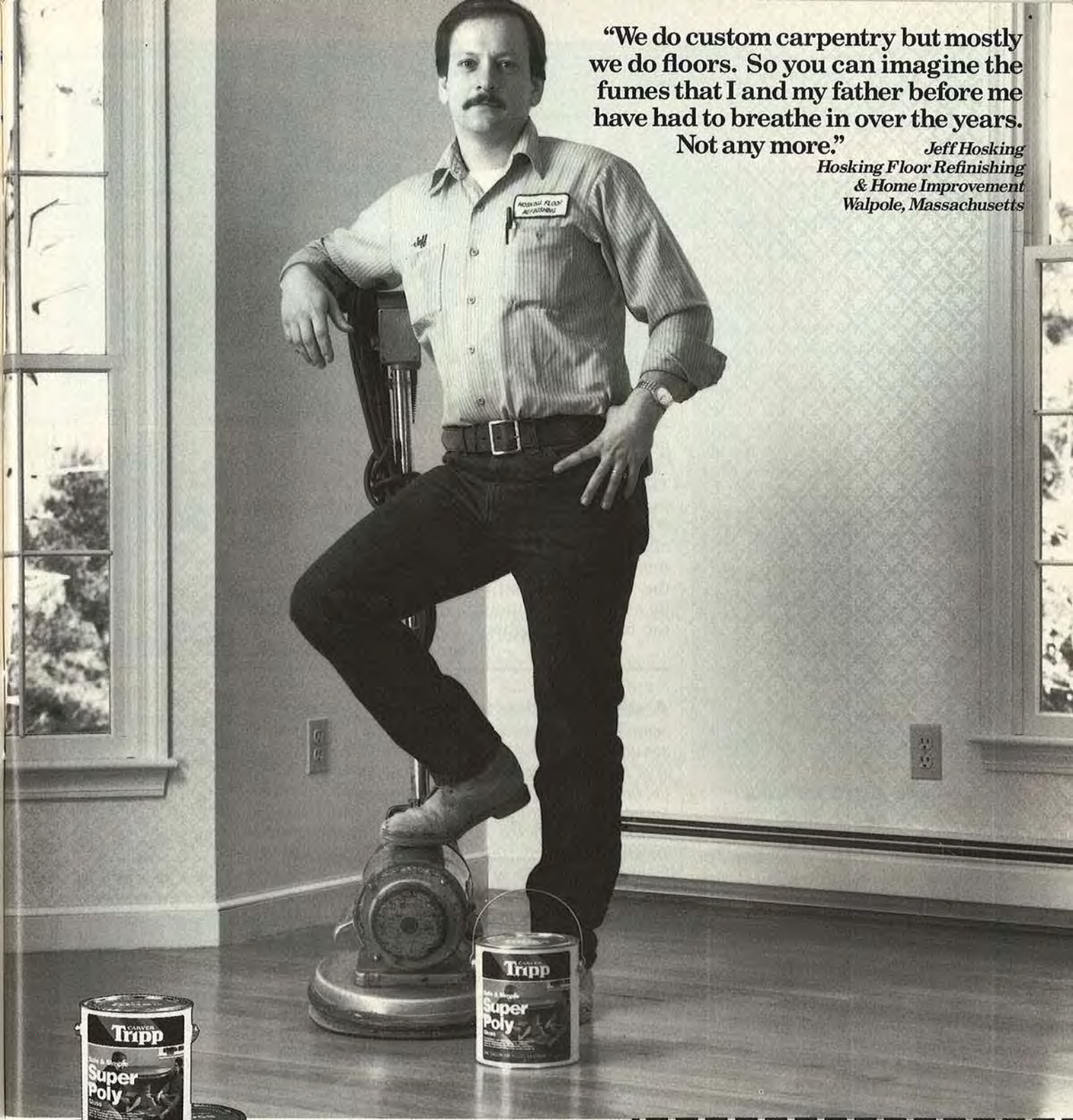
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Do you have a great shop tip (or two) you'd like to share with other *WOOD*® magazine readers? For each published submission, you will get at least $25 from *WOOD* magazine (up to $200 if we devote a page or more of space elsewhere in the magazine to your idea). You also may earn a woodworking tool for submitting the top shop tip for the issue.

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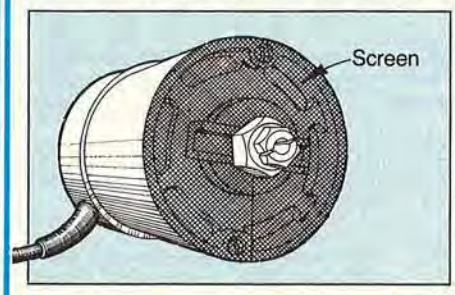
### A simple guard for your router-table's router

*A router table can be an indispensable tool, but if a router-bit shank breaks, look out! Any pieces falling into the router housing can cause damage to the router's cooling fan and motor.*

**TIP:** Place a piece of fiberglass window screen over the bottom of the router to block any broken bit pieces. Small drops of cyanoacrylate (instant) glue will hold the screen in place.

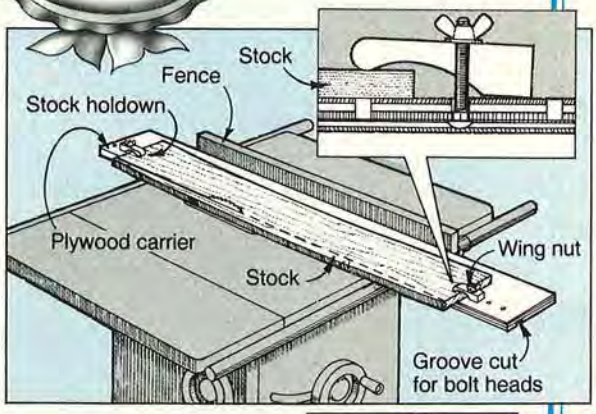
***—Roger Ronald, Sachse, Texas***




TOP SHOP TIP

### This jig quickly straightens edges

*Attempting to rip a straight edge onto a board with irregular edges can be dangerous or downright impossible. One solution: Tack a straight board to the irregular board with finishing nails. Unfortunately, this method leaves small nail marks in the top surface of the workpiece.*




**TIP:** Construct a carrier board from ¾" plywood to a width and length to accommodate most of your boards (14"×7' works for me). As shown *above,* you can quickly clamp the workpiece to this carrier board, then rip one edge. Remove the workpiece from the carrier board, place the jig aside, and position the just-ripped edge along the fence to straighten the other edge.

***—Thomas Bruzan, Des Plaines, Ill.***

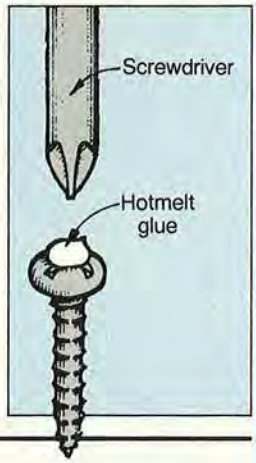
For his tip, Tom receives the Makita model 3606 router shown *above.*

### A sticky solution for a screwy problem

*Sometimes, tight quarters restrict you from steadying a screw or bolt with one hand while you turn a screwdriver or ratchet with your other hand. Hopefully, the fastener will stay attached to the tool as you position it and attempt to drive it in. If the fastener falls, you might be in for an aggravating experience.*

**TIP:** Drop a small dab of hot-melt glue onto the head of the fastener, and attach the screwdriver or ratchet. When you finish driving the fastener, the tool will release easily. A little scraping removes any residual adhesive.

***—David J. Casolino, Milford, Conn.***

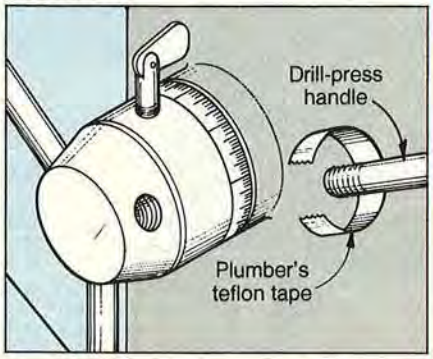



### An end to loosened drill-press handles

*Drill-press handles seem to loosen by themselves. Constantly retightening the handles because of machine vibration can unnerve even the calmest woodworker.*

**TIP:** Remove the handles and wind two revolutions of plumber's teflon tape around the threads. Now, replace each handle and tighten it for a no-slip fit.

***—Dave Godlewski, Sparks, Nev.***




*Continued on page 18*

*Chimney sweeps at one of the regular August West training workshops.*

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## TIPS FROM YOUR SHOP (AND OURS)

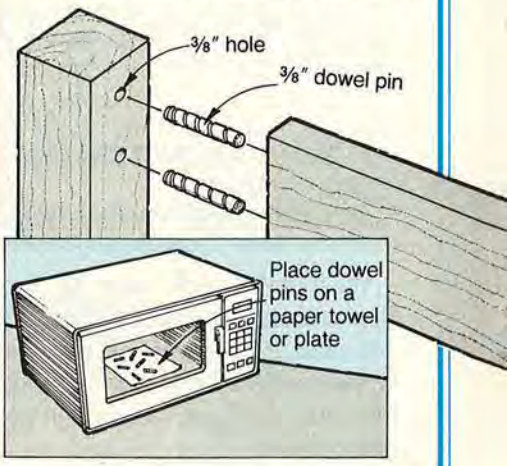
*Continued from page 16*

### Microwave dowels for a better fit

*Just the moisture in the air can swell dowel pins so they're practically impossible to fit into the holes drilled to receive them. Forcing them into place runs the risk of splitting the bored pieces.*

**TIP:** Shrink those dowels by placing them on a paper towel or plate inside a microwave oven set on "HIGH" for 30 seconds. Check the pins for fit and microwave them for an additional 15 or 30 seconds if necessary.

***—From the WOOD magazine shop***

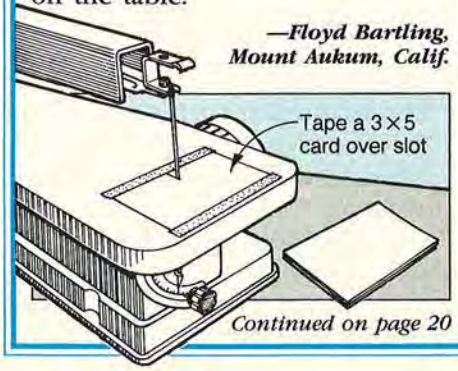



### File card prevents tiny pieces from vanishing

*When cutting out small, delicate parts on a scrollsaw, the miniscule results almost always fall through the table opening and into the debris below, requiring you to stop to search for them.*

**TIP:** Make a cut in a 3×5" note card and tape it in place as shown *below* to keep those tiny cutouts on the table.

***—Floyd Bartling, Mount Aukum, Calif.***




*Continued on page 20*

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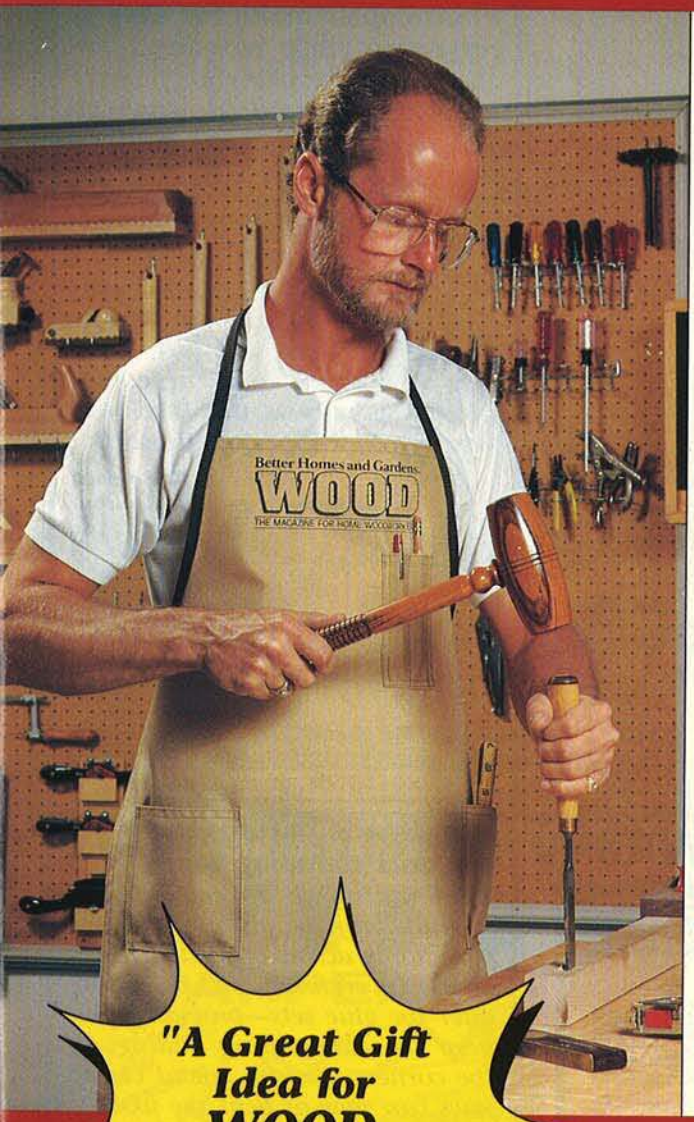


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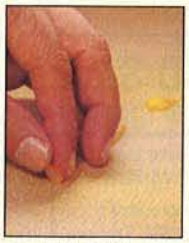

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## TIPS FROM YOUR SHOP (AND OURS)

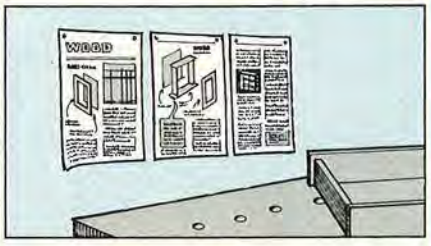
*Continued from page 18*

### Photocopies make for easy reference while working

*Many fantastic plans for projects appear in periodicals such as* WOOD *magazine, but hauling them into the shop and referring to them as you work invariably damages the pages.*

**TIP:** Photocopy the pages with the drawings, lists and other information you need and post them near your work area. The copies can get as tatty as they like; you simply toss them when finished.

***—D. K. Bonisch***
***Wellington, New Zealand***

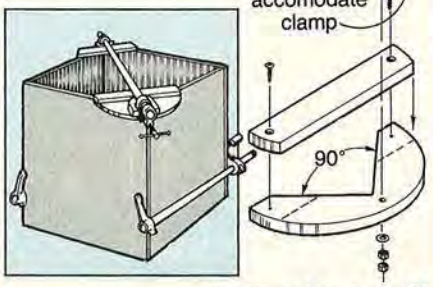



### Homemade fixtures make diagonal clamping easy

*When gluing up the ends of rectangular projects, placing a bar or pipe clamp across opposite corners assures everything will be square after the glue sets—providing you keep the clamp from sliding off the corners. Besides, metal clamp jaws can mar or dent the work.*

**TIP:** From ¾" plywood, make a pair or more of swiveling fixtures as shown *below*. Use dimensions that fit your projects and clamps. These fixtures work well without slipping or disfiguring the work.

***—R. B. Morris,***
***Louisville, Ky.***




*Continued on page 23*

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## TIPS FROM YOUR SHOP (AND OURS)

*Continued from page 20*

### Pattern of protection

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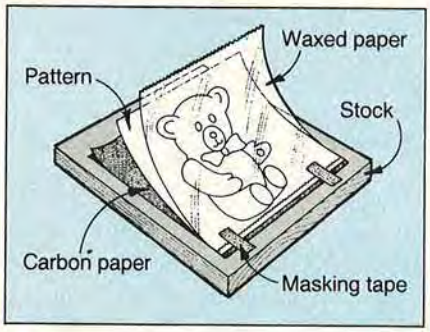
**TIP:** To get extra mileage from your patterns, place a sheet of waxed paper over them before getting started. You'll not only protect the pattern, but you can quickly tell what you've traced, and what you haven't.

***—Reuel Smith, Halifax, Nova Scotia***




### More great tips from our woodworking staff

- Even if you don't build our brass-and-walnut square, see the two-step procedure on page 35 for checking the accuracy of your square.
- Knockdown furniture joints can be mighty handy in this on-the-go world. See how we used cross dowels and hex-head bolts to join the workbench framework on page 48.
- If you're planning to add a workbench to your shop, see the box on page 49 for your alternatives in inexpensive to top-of-the-line surfaces.
- For a foolproof method of drilling holes in the exact center of turnings, see page 65.
- Thin-veneered, imported plywood leaves little margin for error. Find out how to cope with it on page 69.
- Discover how to enhance your woodworking projects with laser cutting. See page 75.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# WOODWORKING

Print this article

## Tame that vacuum hose

You know the routine. After cleaning an area with your shop vacuum, you return the vac to its storage spot. Then, you try to wrap the hose around the motor cover. Without warning, the hose unwinds itself and sprawls across the floor. But now, Sears has a 99-cent solution to this misfortune.

To make the Sears 2½" hose lock work, you simply hook one end of the double wishbone-shaped clip to the hose about one foot from the tank intake. When it's time to store the vacuum, just wrap the hose around the motor several times and then clip the loose end of the hose into the free end of the hose lock. I tried the hose lock on Shop Vac and Sears vacuums, and it worked perfectly.

**—Tested by Bill Krier**

*Sears 2½" hose lock, 99 cents at Sears stores.*

## Sanding Tadpoles that turn projects into princes

Just the mention of any product that promises to take some of the toil out of sanding—especially contour-sanding—is enough to make my ears perk up. So when the Tadpole contour sanding grips leapt into my shop, I jumped at the chance to try them out.

Unlike dowels, the four flexible Tadpoles for concave surfaces fit every project I tried them on, held the sandpaper snugly, and kept my fingers away from splinters. I highly recommend them.

**—Tested by Steve Oswalt**

*Tadpole contour sanding grips, catalog No. 06E34, $5.50 ppd. from Woodcraft Supply Corp., 210 Wood County Industrial Park, P.O. Box 1686, Parkersburg, WV 26102. Call 800-225-1153.*


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Model 1371

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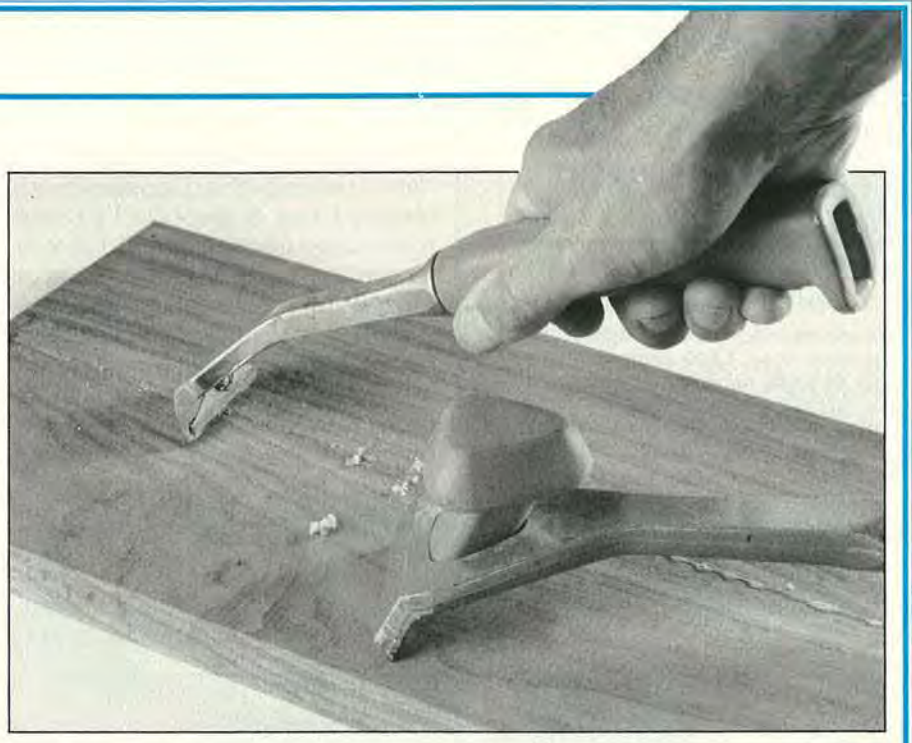
## Indestructible scrapers

Unlike other scrapers I've seen, these Sandvik tools have carbide blades that, judging from my tests, refuse to wear. I scraped paint off metal, and glue and paint off wood, with no signs of dulling. As the ultimate test, I scraped the trim of my entire house and loaned the same scraper to my neighbor, Mark, who prepped his windows and trim. The blade stayed as sharp as ever. Replacement blades cost about $5 each, but they're worth every penny.

The plastic handles of all three models fit my hand perfectly and the tools' aluminum shaft held up under heavy abuse. I purposely left the tool out in the grass for a few days of rain and dew. Result: not a speck of rust. If I had to own just one of them, I'd pick the 2½" model for all-around tasks.

**—Tested by Steve Oswalt**



*Sandvik scrapers, 2½" blade with knob, catalog no. 04M21, $14.95 ppd; set of 1" and 2" scrapers, catalog no. 14110, $15.50 ppd from Woodcraft Supply Corp., P.O. Box 1686, 210 Wood County Industrial Park, Parkersburg, WV 26102. Call 800-225-1153.*

*Continued on page 28*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# PRODUCTS THAT PERFORM

*Continued from page 27*

## No-nonsense screw chuck

After testing the Glaser screw chuck, I rate it the best I've ever tried. It tenaciously held every workpiece I attached it to, except for one piece of green wood. For a stronger hold, I found that it helped to screw green, lightweight, and other weak woods onto the chuck, then remove the blank and shoot some instant glue into the hole. After hardening the glue with accelerator spray, I reattached the screw chuck. The chuck's thin, stainless steel threads proved durable, as were the anodized aluminum body and collar. The reversible and removable collar changes the diameter of the chuck from 1½" to 2½" to 3½" for turning plates as large as 15" in diameter and 3" thick.

I could have used a second dismounting rod to increase my leverage while removing the collar. The manufacturer plans to include two rods in the future.

**—Tested by Steve Oswalt**

*Glaser screw chuck, $72.50 ppd. from Glaser Engineering, 1661 E. 28th St., Signal Hill, CA 90806. Specify the make of your lathe.*

## A simple way to get started in wood collecting

If you would like to become a full-fledged wood-sample collector, or just own enough wood samples to help you decide what woods belong in your next project, here's a moderately priced way to start. After receiving my set of 42 wood samples from Worldwide Woods, I was impressed by the variety and quality of the ¼ × 2¼ × 5½" blocks. Species include domestics and exotics. A label on each block cites its common name, scientific name, source, and a brief description of its properties.

**—Tested by Bill Krier**

*Domestic and exotic wood samples, $29.95 ppd. from Worldwide Woods, P.O. Box 1398, Arvada, CO 80001. Call 303/393-7441.*

## Electronic level gives you a new angle on tasks

It had to happen sooner or later—electronics have come to the level. The SmartLevel by Wedge Innovations clearly outperforms its bubble-type predecessors.

I found the SmartLevel extremely accurate and easier to read than a bubble level. In addition to displaying level or plumb, the tool also measures rise over foot of run (pitch), and degree and percent of slope. Also, fine craftsmanship shows throughout the tool, from the wedge-shaped teak and aluminum rail, to its LCD readout.

After leveling every machine in my shop, I tackled a few construction jobs. All the while, my greatest fear was dropping the tool, but the SmartLevel survived my clumsy workstyle like a champ.

**—Tested by Perry McFarlin**

*SmartLevel, $119.95, $149.95, and $179.95 for 2', 4', and 6' models, plus shipping, from Wedge Innovations, 532 Mercury Drive, Sunnyvale, CA 94086. Call 800-762-7853.*

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# COTTONWOOD

## Great Plains' guidepost

Westward-bound wagonmasters of the mid-1800s scanned the horizon for the cottonwood because its presence always signaled water. That's how groves of cottonwood became gathering places for weary travelers.

Pioneer homesteaders planted the fast-growing trees as windbreaks, cut them for fence posts and firewood, and worked the wood into baskets and boxes. Hollowed-out logs even served as canoes and cargo vessels.

To the Mohave Indians, the cottonwood was also a primary resource. They ate the tree's raw catkins, consumed its inner bark as medicine, and wove baskets from its green twigs. The Hopi and Pueblo kachina dolls could only be carved from cottonwood roots—where good spirits lived.

### Wood identification

Cottonwood claims 25 species around the world, from the Himalayan Mountains to the plateaus of Chile. The U.S. alone has 11 species. However, only two cottonwoods have commercial importance: Eastern cottonwood (*Populus deltoides*), native from the Midwest to the Atlantic, and black cottonwood (*Populus trichocarpa*), which grows in the valleys of the Pacific Northwest.

Cottonwood favors moist, well-drained soil along waterways. There, it quickly sprouts from tiny seeds, cut stumps, roots, and even branch cuttings. In these conditions, cottonwood can average 5′ in growth per year for its first 25 years. During a tree's 125-year lifespan, it may rise to a height of 150′ with a diameter ranging from 7′ to 8′.

You'll recognize cottonwood by its thick, deeply fissured gray bark. But, perhaps more familiar will be its large, heart-shaped leaves and summertime tails of fluffy down, the "cotton" for which it was named.

The close-grained heartwood of

Natural range

with gray or purple mineral streaks. Its thin sapwood is creamy white.

### Uses in woodworking

Due to cottonwood's light weight, lack of odor and taste, colorlessness, and nail-holding ability, about half of all the wood harvested becomes boxes and crates. The wood also holds printing inks better than most woods, making it ideal for shipping labels and logos. Although some cottonwood becomes commercial veneer for utility and low-priced furniture, most ends up as fruit and berry baskets or boxes.

All of cottonwood's commercial qualities add up to make it perfect for children's toys and games. Thin stock also adapts well to painted or stenciled scroll-saw projects. And, with qualities similar to basswood, cottonwood fulfills carvers' needs.

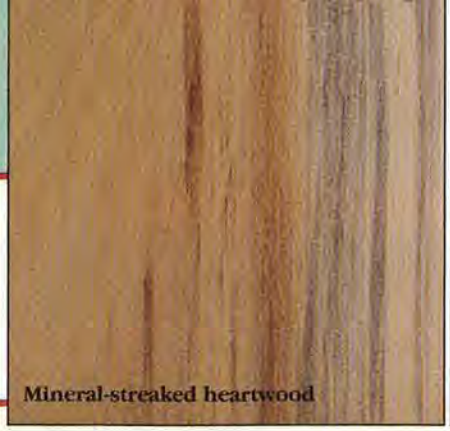
### Availability

More often sold as carving blocks than lumber, cottonwood costs less than basswood. Where available as lumber (sometimes in ⅛″ thickness for drawer backs and bottoms), expect to pay about $1 per board foot. Veneer isn't usually retailed, since demand is low.

*Continued*

# PERFORMANCE PROFILE

# Cottonwood
*(Populis deltoides)*


Mineral-streaked heartwood

Heartwood and sapwood

## Machining methods

When woodworkers shun cottonwood—either from unfamiliarity or rumors of instability—they miss out on a good wood at a great price. It's soft for a hardwood, but surprisingly strong, and it works easily with hand or power tools. The only fault cottonwood has is fuzzing. That is, hairlike wood fibers tend to lift—sometimes during machining, and always in finishing. *Here's how to make the best of this overlooked wood:*

- Start with well-seasoned boards. Thick (over 1") stock should be examined and felt for spot dampness coming from water pockets that result when processors rush the seasoning. Avoid these. And, for best results, bring all cottonwood indoors before working so that it can equalize with house humidity.
- Plane cottonwood at high speed with sharp knives to lessen fuzzing (or at a high feed rate). Its tight, straight grain poses no jointing problems.
- Unlike many hardwoods, cottonwood won't tear out or chip when crosscutting. Due to the wood's density, however, ripping requires a rip-set blade with no more than 24 teeth.
- Although cottonwood doesn't burn easily against a router bit in cuts with or across the grain, it will fuzz, especially with dull bits.
- Because this lightweight wood (at 28 pounds per cubic foot about a third lighter than walnut) doesn't split easily, it's not necessary to predrill for screws. And, all glues perform well.
- Sanding creates surface fuzz, too. So, for the best results, apply a sanding sealer after you've given the wood its first once-over. Then, sand again.
- Some cottonwood boards may have blueish-gray streaks. Under a clear finish, the streaks can look attractive. However, a pigmented stain will turn the streaks into a dark, unsightly discoloration. Note, too, that some cottonwood won't accept stain evenly without first applying a wood conditioner.

## Carving comments

Heavier, but of about the same softness as basswood, cottonwood usually carves with little effort. Some pieces, probably depending on where the wood grew or how it was dried, will be tougher. Its grain does not lend itself well to fine detail. *Some advice:*

- Cottonwood's tendency to fuzz translates to stringiness in carving. That is, unless you keep your cutting edges sharp, cuts won't be clean. Yet, a knife or gouge won't stray in the grain.
- Since the wood has little color or figure, and lacks the luster that even basswood displays under the blade, carvings made from it usually require paint or stain.

## Turning tricks

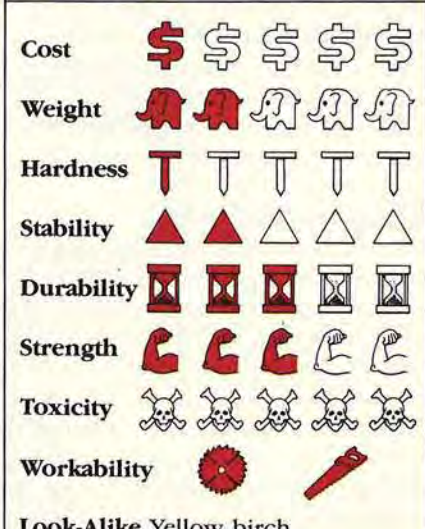
Approved by the FDA for food containers, cottonwood works well for bowls. However, only shearing cuts with sharp tools defeat fuzzing.

## SHOP-TESTED TECHNIQUES THAT ALWAYS WORK

*Any exceptions, and special tips pertaining to this issue's featured wood species, appear under headings elsewhere on this page.*

- For stability in use, always work wood with a maximum moisture content of 8 percent.
- Feed straight-grained wood into planer knives at a 90° angle. To avoid tearing, feed wood with figured or twisted grain at a slight angle (about 15°), and take shallow cuts of about 1/32".
- For clean cuts, rip with a rip-profile blade with 24–32 teeth. Smooth crosscutting requires about a 40-tooth blade.
- Avoid drilling with twist drills. They tend to wander and cause breakout. Use a backing board under the workpiece.
- Drill pilot holes for screws.
- Rout with sharp, preferably carbide-tipped, bits and take shallow passes to avoid burning.
- Carving hardwoods generally means shallow gouge bevels—15° to 20°—and shallow cuts.

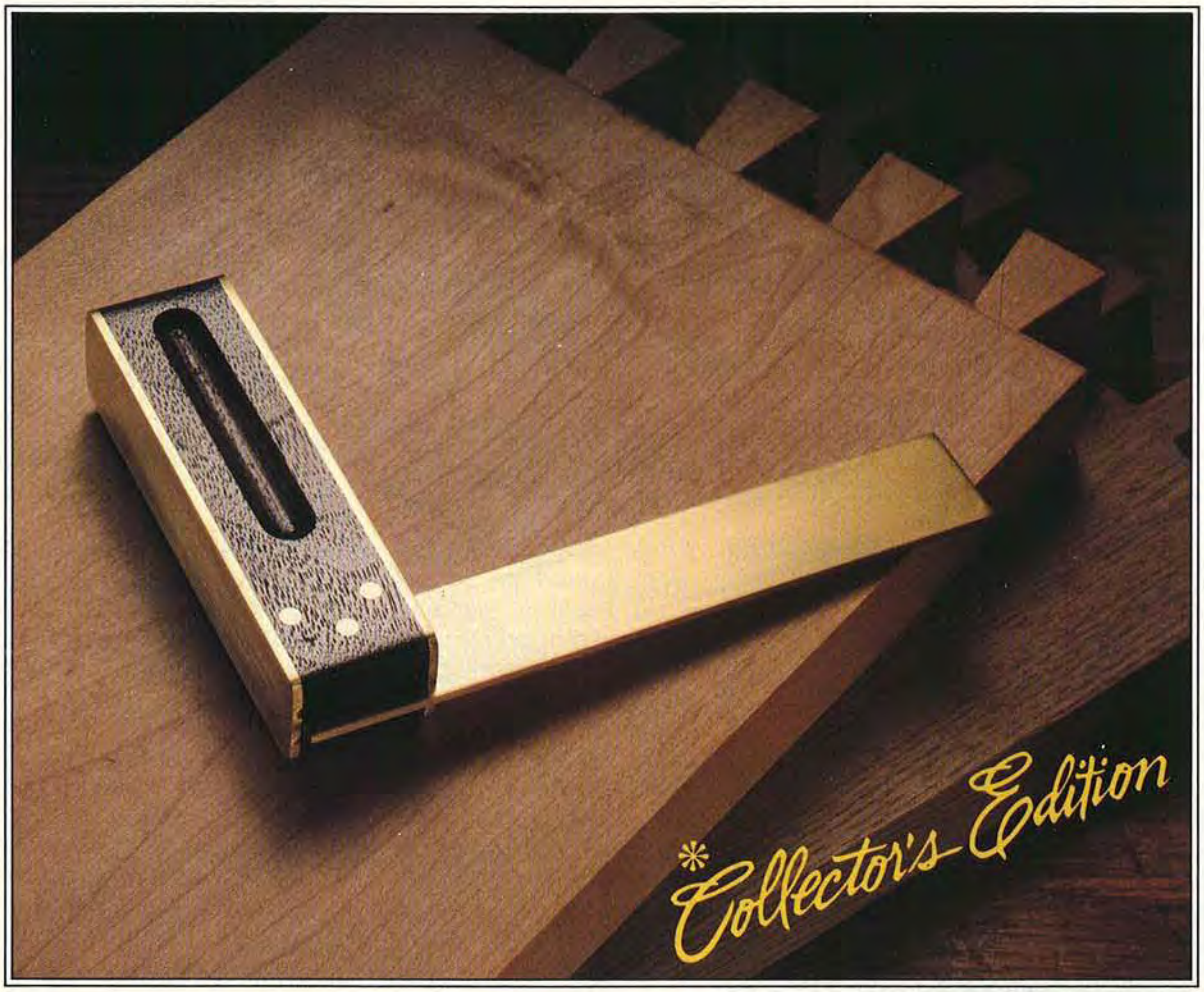
## COTTONWOOD AT A GLANCE




**Look-Alike** Yellow birch

Compiled with woodworkers Robert McGuffie, Jack Settle, and carver Max Alvarez

Illustrations: Steve Schindler




# POCKET-SIZED TRY SQUARE

**There are few tools more indispensable in a workshop than an accurate square. That's why we're so pleased to be able to share this Jim Boelling-inspired project design with you. Are the squares accurate? You bet they are. Several of us on the *WOOD*® magazine staff spent a few hours in the shop building seven squares using the drawings and instructions shown here. Then, we sent our squares to the College of Technology at Bowling Green State University in Ohio for testing. All of the squares measured to within .008" of perfect square—well within the requirements of home woodworkers. And, here's more good news: Our squares cost less than $4 apiece to build.**

*Continued*

Print this article

# TRY SQUARE

## Begin by building the walnut body

**1** Cut a piece of ¾" walnut to ¾" wide by 7¾" long. (We searched through our walnut stock until we found a piece with highly figured grain. Also, the piece is cut extra long for safety when routing the coves in the next step. If you want, rout coves on both ends before crosscutting and you'll have enough stock for two handles.)

**2** Chuck a ⅜" core-box bit into a table-mounted router. Raise the bit 3/32" above the table surface where shown on the End Section Detail *below.* Position the fence ⅜" from the center of the bit.

**3** Clamp two stops to your router table fence where shown. With one end of the walnut against Stop 1, lower the face-grain edge onto the bit and push the walnut to Stop 2 to rout the groove. Repeat the procedure on the opposite surface of the walnut.

**4** Crosscut the routed end of the walnut to 3¼" long.

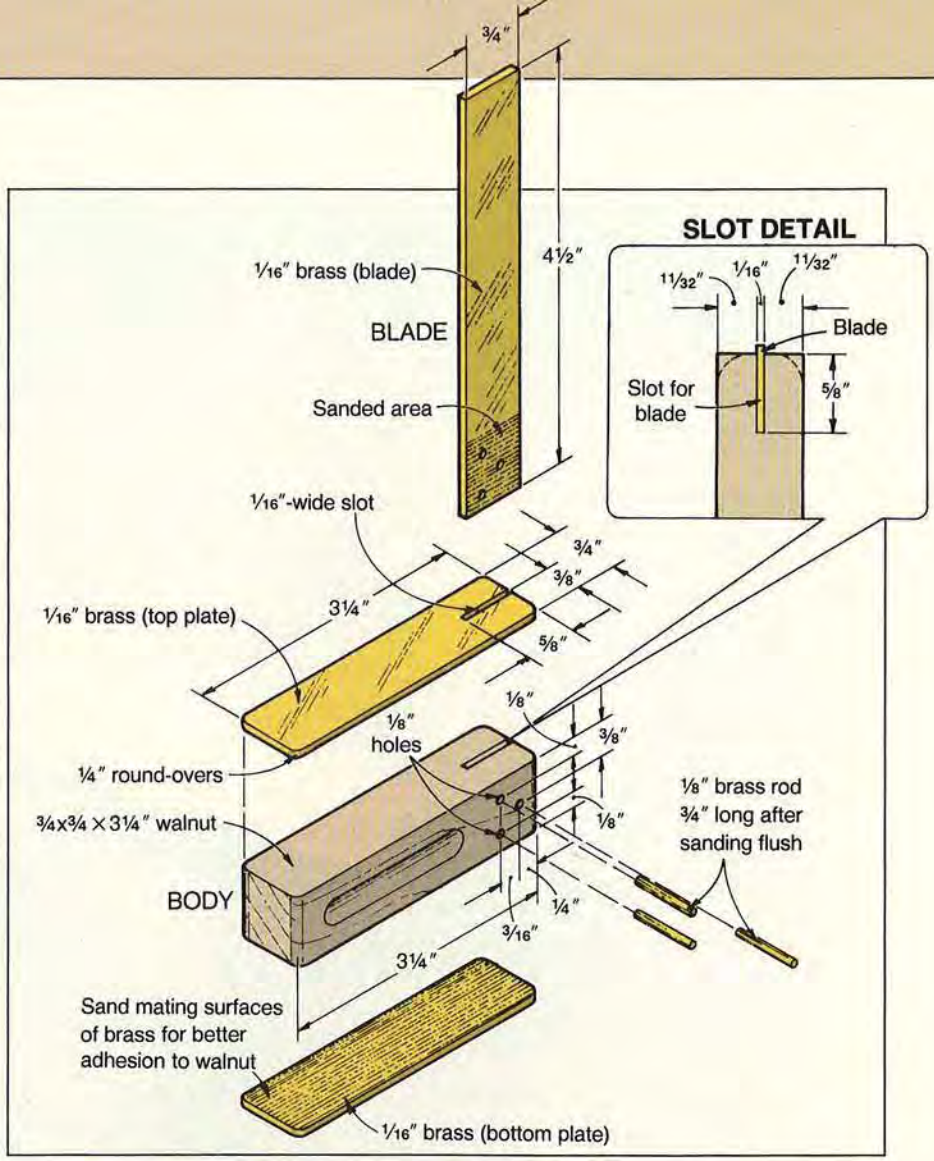
## Cut the blade slot, and add the brass trim

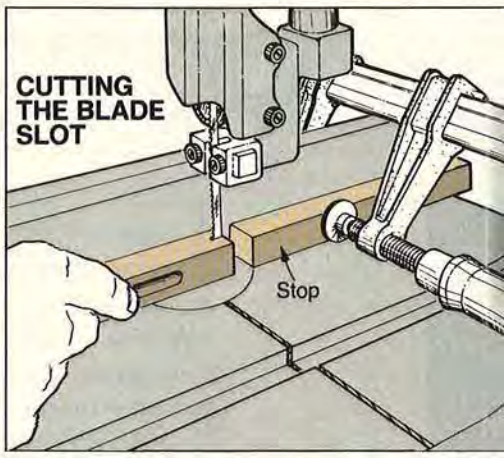
**1** Mark the blade-slot location on the end of the walnut where shown on the the Exploded-View Drawing and the Slot Detail accompanying it.

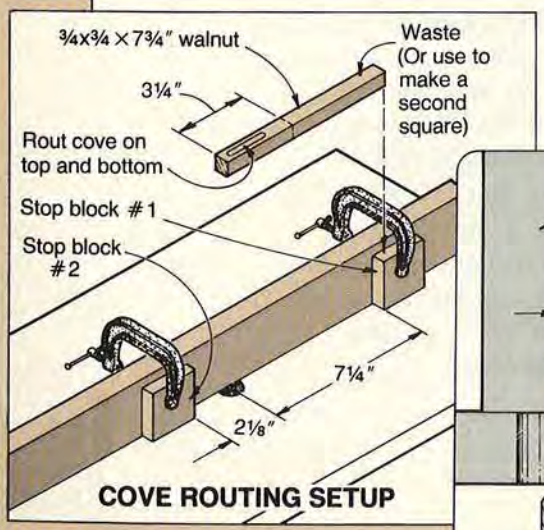
**2** Check that your bandsaw table is square with the blade. Cutting just inside of the reference lines, make bandsaw cuts to form the 1/16"-wide slot. (To ensure straight and accurate cuts, we used the fence and a stop on our bandsaw when cutting the slot where shown in the drawing at *right.*) Check the fit of the 1/16" brass (often referred to as .064" brass) in the slot; it should fit snug.

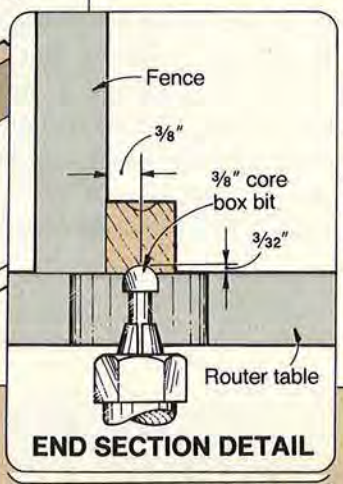
**3** Cut two pieces of 1/16 × ¾" brass to 3¼" long each (the same length as your walnut handle) from one 12" length of brass for the top and bottom plates. See the Buying Guide for our source of brass.

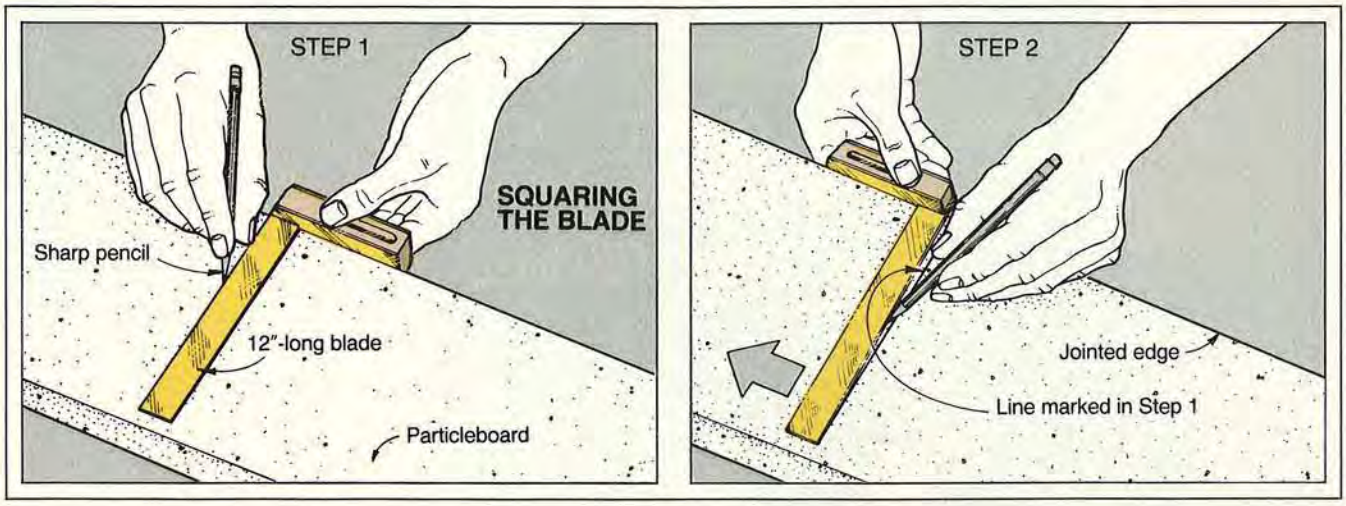
**4** For better adhesion with the quick-set epoxy, sand one surface of each brass piece with 80-grit sandpaper. With the edges and ends flush, epoxy and tape (we used masking tape) one of brass pieces, the top plate, to the walnut. Then, with the brass side down, use the previously cut slot in the walnut to bandsaw the same-sized slot in the brass.






**5** Being careful not to get any epoxy inside the slot, epoxy the other piece of brass (the bottom plate) to the opposite surface.

**6** File and sand the edges of the brass and walnut flush. (We used a file to round the edges, and then sanded the body on a stationary sander.) Be careful not to let the brass get hot. Otherwise the epoxy will soften, causing the brass to delaminate from the walnut.

**7** Sand or file a slight round-over on each corner of the square body. (We used a disc sander.)

## Here's how to install the blade accurately

***Note:*** *To position the blade as square as possible to the handle, we found it much better to start with a 12" brass blade and trim it to length after epoxying and pinning it in place.*

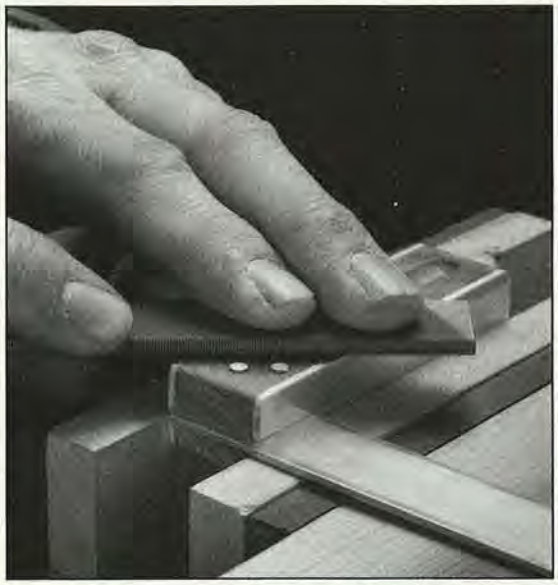
**1** Cut a piece of particleboard to 13" wide by about 10" long. Joint one edge of the particleboard.

**2** Sand the bottom ¾" of a 12" length of brass for better adhesion. Using a toothpick, spread some quick-set epoxy into the slot in the body.

**3** Slide the blade into the slot. Immediately wipe off excess epoxy. Before the epoxy hardens (in less than 5 minutes), use an existing square to position the blade at a 90° angle to the body. Being careful not to jar the blade out of alignment, position the square's body against the jointed edge of the board. Mark a line, the length of the blade, across the particleboard (see Step 1 of the drawing *above*). Use a sharpened pencil; the sharper the lead, the more accurately you can position the blade. Flop the square as shown in Step 2 of the drawing, and mark a second line. Repeat the process, adjusting the blade until the lines align perfectly. Let the epoxy cure. If after the epoxy cures your blade is not square with the body, file the blade with a mill bastard file, following the two-step drawing to check for square.

**4** With an awl, mark indentations for the brass-rod holes where dimensioned on the Exploded-View Drawing. With a twist-drill bit, drill three ⅛" holes through the body and blade. Cut three pieces of ⅛" brass rod ⅞" long. Epoxy a brass rod in each hole. File and sand the ends of the rods flush with the edges of the walnut as shown in the photo *above right.*

**5** Crosscut the blade to 4½" long. (We supported ours on a 1 1/32"-thick block of wood and trimmed it to length on the bandsaw.)



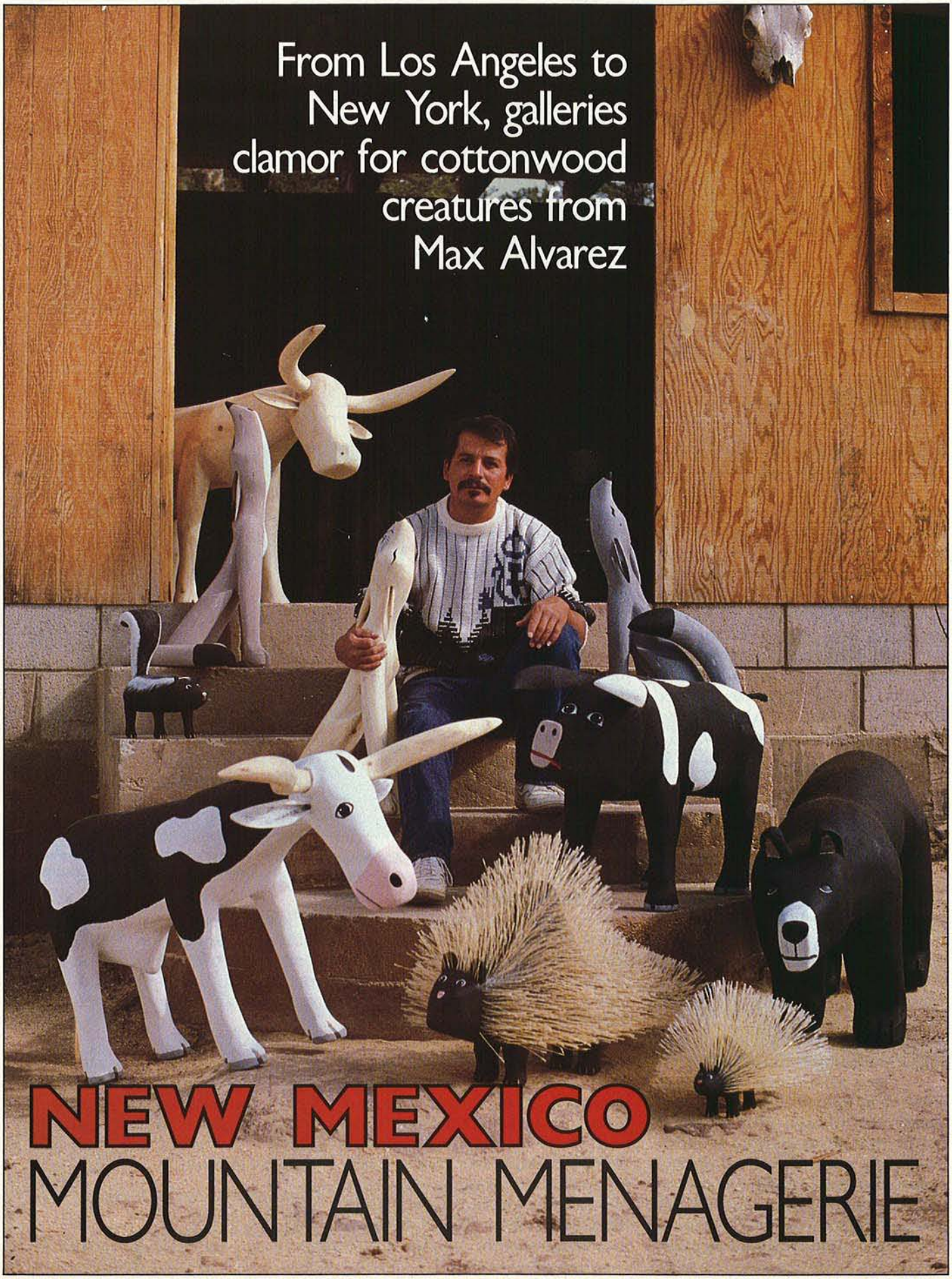
**File the ends of the brass rods flush with the surface of the walnut.**

**6** Sand the walnut with 220- and 320-grit sandpaper. Polish the brass with 600-grit paper or brass polish. Finish the brass and walnut with an aerosol lacquer.

## Buying Guide

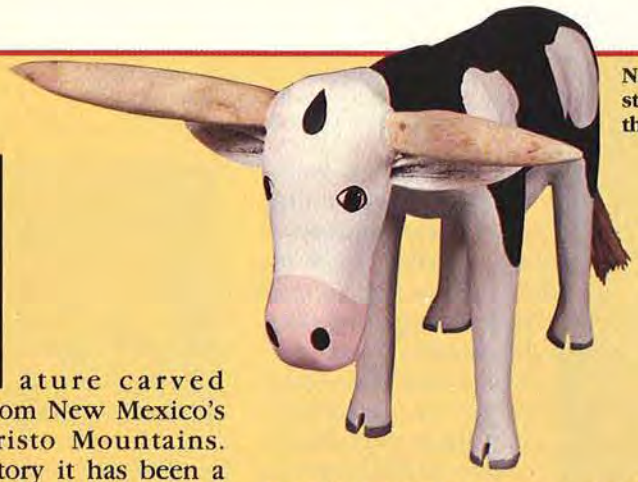
● **Brass and file.** Two pieces of 1/16 × ¾ × 12" brass, ⅛"-diameter brass rod 6" long, $6.75 ppd. If you need the 8" mill bastard file, add $4.50. Puckett Elec., 841 11th St., Des Moines, IA 50309.

Produced by Marlen Kemmet
Project Design: Jim Boelling
Photographs: Hopkins Associates
Illustrations: Kim Downing; Bill Zaun



From Los Angeles to New York, galleries clamor for cottonwood creatures from Max Alvarez

# NEW MEXICO MOUNTAIN MENAGERIE



Naturally, most of the carved longhorn steers made on the mountain top find their way to Texas.

Nature carved Glorietta Pass from New Mexico's Sangree De Cristo Mountains. Throughout history it has been a gateway—in 1541 for explorer Francisco Coronado, later for the Spanish missionaries, always for raiding Apaches and Comanches, and in the 1820s, for those following the Santa Fe Trail.

In Twentieth Century New Mexico, the scenic pass 20 miles east of Santa Fe represents yet another gateway. To carver Max Alvarez, the big cut in the mountains is his doorway to the world. Through it, he routes his folk carvings to galleries from California to New York. But, for a man wishing to work in solitude, Glorietta Pass serves another purpose. It presents a barrier to a hubbub world.

## Animals on a mountain top

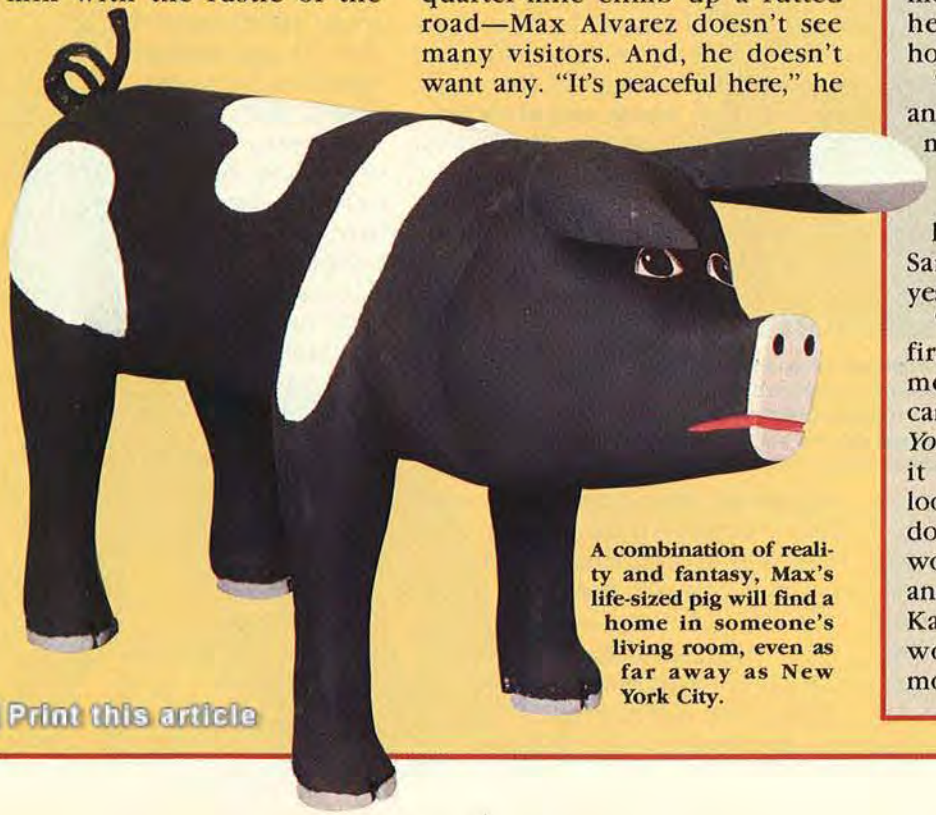
Murmurs of traffic on Interstate 25 mix with the rustle of the wind through the pinyon trees shielding the mountain-top clearing. An ancient horse-drawn wagon, long ago released from active duty, rests its weathered frame beside a dust-drenched pickup. A massive half St. Bernard, half shepherd sleeps in a spot of sunlight on the red clay.

"That's Otis," says Max Alvarez, nodding to the dog just now getting to its feet. "I named him after Otis Redding, the singer. In the daytime, he won't bother anyone. Nights, though, he turns guard dog." Sitting astride the roughed-out, unpainted wooden body of a 3'-high longhorn steer, Max folds his arms after the informal greeting, pausing from his work.

Because of the unmarked, secluded site—only gained after a quarter-mile climb up a rutted road—Max Alvarez doesn't see many visitors. And, he doesn't want any. "It's peaceful here," he explains. "In Santa Fe, people were always dropping by."

The setting with its view of the valley and mountains, the quiet, the smell of juniper and pine, all contribute to Max's production.

*Continued*



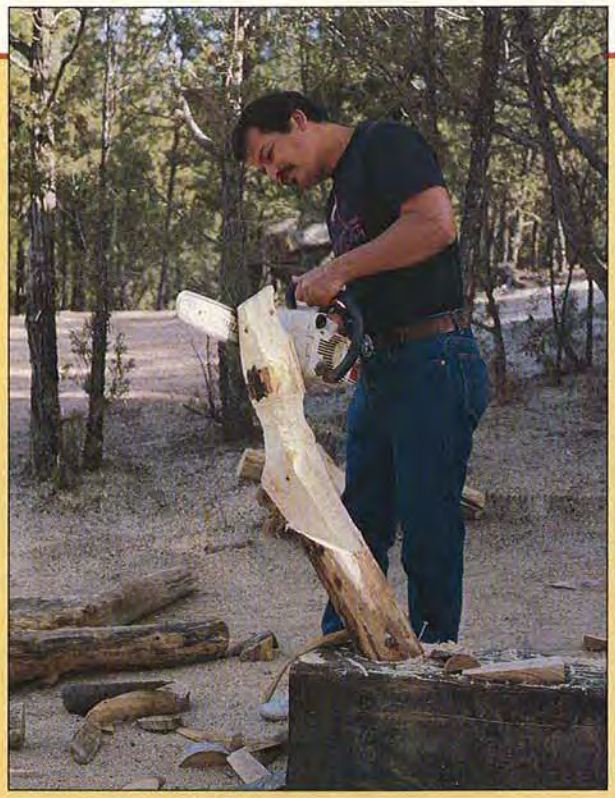
A combination of reality and fantasy, Max's life-sized pig will find a home in someone's living room, even as far away as New York City.

The road to Sante Fe was a long, straight one for carver Max Alvarez. Born in Oakland, California, the second of nine children, he went to work for the railroad soon after high school. Eventually, Max, now 37, became a foreman for the Southern Pacific Railroad and traveled extensively in the Southwest. In 1979, travel lost its appeal and Max quit to move to New Mexico, where he discovered carving as a hobby. Soon, it was full-time.

"I was carving watermelons and cats," he recalls. "I had so many orders, it seemed right. Finally, I took my work to the Elaine Horwitch gallery in Santa Fe, then the Santa Fe Store." Discovered, yes. Famous? No.

"It was kind of slow those first couple years," Max remembers. "Then, an article came out on me in *The New York Times*, and that's when it took off. Galleries started looking for me." And they still do. We spotted some of Max's work on a visit to Santa Fe, and went to see how he, and Kathy, his wife, deal with wood and fame from their mountain top in Pecos.

Print this article



The few first chainsaw cuts establish the body lines for a howling coyote. Max only uses air-dried wood.

Sometimes assisted by helpers, and by his brother, Rory, he turns out at least 10 animal carvings a week to meet commitments.

"These are already sold through the galleries," notes Max, pointing to the menagerie in view. A mother bear and her cub, awaiting sanding, stand just inside the shop. Beside the steps, another longhorn. Out between the pines, a coyote pair. By a boulder, a full-sized pig. Next to it, a porcupine.

Carved of cottonwood and painted in a stark, often bright, folk-art style, Max's animals have, in just a few years, become the rage. Max supplies a simple explanation. "They're just different. It's like years ago, everybody wore only white shirts, then colors became popular. Now, people like bright things."

For details on his animals, Max uses only simple tools, such as an electric drill and a gouge made from a sharpened screwdriver.

## Copycat coyotes

At prices that start in the $250 range and climb to $1,000, Max's folk-art carvings are liked a lot. But, as much a compliment to his work as its popularity, is its imitation—coyotes crowd Santa Fe.

Tourists now walk the streets of the old town between packs of coyotes—yellow coyotes, green coyotes, orange coyotes, polka-dot coyotes, small coyotes, tall coyotes, coyotes howling, even coyotes wearing knotted bandanas. Nearly every store offers them. Few places, though, carry the colorful carved coyotes Max made famous.

"In 1982, I started making coyotes with Alonzo Jimenez, a carver who had worked with Felipe Archuleta [Santa Fe's veteran folk-art carver]," Max relates. "Alonzo made one that was sitting down, and I liked it, so I said 'Let's start making them.' Then, everybody wanted a coyote, and it went on. Now, so many people have copied the coyote that they are all over the place."

The fact that other carvers imitate Max's coyotes bothers him not at all. He has confidence in the quality of his work. "I've seen the way they were made—they're so fragile," he says. "They use dowels, they slap them together and nail them. That's why they have to go store to store to sell them. My coyotes, the galleries order, even though my prices are higher."

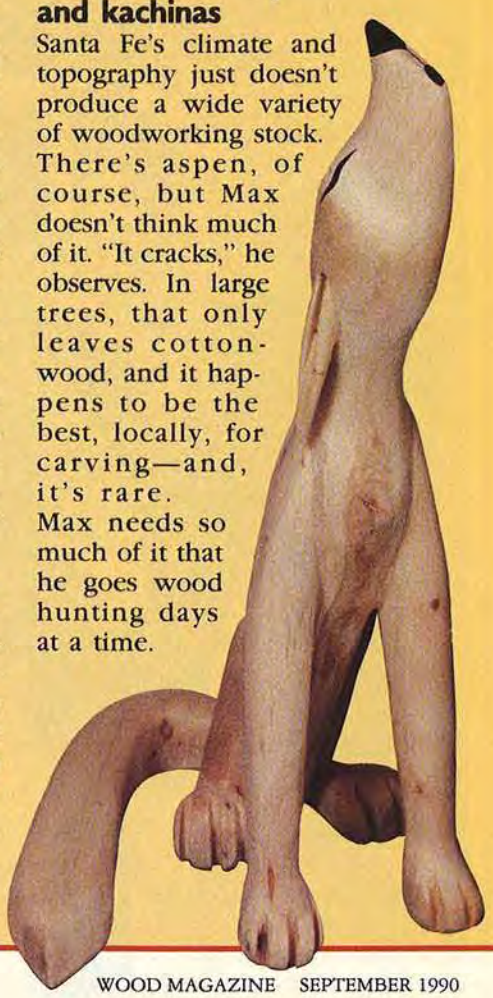
Why does the coyote have so much appeal? "Coyotes are symbolic of the Southwest," says Max. "They are also a beautiful animal in the wild, and very intelligent. There's quite a few of them around here—I hear them howl at night."

Max's trademark coyotes, that make up 60 percent of his carvings, range from 12" tall to over 6', and come in an assortment of colors. "In folk art, the colors should be bright," says the carver. "But I try to stay away from very bright colors. I paint them gray, or tan, or something light, then streak them with red, yellow, or blue over the top coat. They look more real."

Real folk art means more than color. To an extent, the definition covers craftsmanship, too. Unsanded, rough, semi-finished. Max rebels at the thought: "I like to make my animals more refined, more finished, and I get recognition for that, too. I can even make an animal very realistic—not like folk art. I don't want to do that, though, and get off on a different track. I wouldn't enjoy it."

## The wood of coyotes and kachinas

Santa Fe's climate and topography just doesn't produce a wide variety of woodworking stock. There's aspen, of course, but Max doesn't think much of it. "It cracks," he observes. In large trees, that only leaves cottonwood, and it happens to be the best, locally, for carving—and, it's rare. Max needs so much of it that he goes wood hunting days at a time.



Graceful lines and muted colors set Max's coyotes apart from others.

Max Rivera, one of the carver's part-time assistants, sands fuzz from an unpainted Mother Bear.

Frowning, he remembers how it used to be, before folk carving became the rage. "There was a lot of cottonwood right around here. The Indians were the first to use it, for their kachina dolls. Then, other carvers came in, and it's scarce close to Santa Fe now. I have to go farther and farther."

Max finds his trees along creeks and rivers on private ranches, open range land, and surrounding Indian reservations, where a tribal permit for wood gathering proves necessary. And, he likes his cottonwood standing dead or down-and-dry, as long as it has no traces of decay. Most of the seasoning has been taken care of by nature. Any remaining moisture the wind and sun will eventually retrieve.

## How a bear stacks up

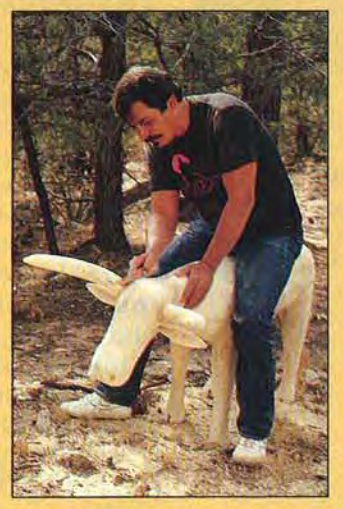
Max never measures. If he even owns a tape measure, you'll never see it in his powerful hands. He just matches, by eye, the many cutoff trunks and branches in his stockpile to the size of the animals he'll make.

"I guess I got used to relying on my eyes while working on the railroad," Max says. "We straightened and aligned track by eye. As an inspector, I was trained to look for broken bolts at 15–20 mph."

Speaking in the artistic sense, he adds, "I have a good eye for my animals, too. I've never sketched them. I just start roughing them right from the wood."

Without any formal art training whatsoever, Max managed to develop an uncanny sense of proportion. Although his carvings aren't meant to be lifelike, his coyotes look natural. His bears appear to be bears. His pigs are pigs. It doesn't take paint to give them identity. The image in his mind's eye, Max begins work. His standing creatures, such as a bear, have few separate parts.

"To make the body, I pull a good-sized log from the pile and shape it with my chainsaw," he explains, the saw beginning to whine and spew chips. "Once it's round. I notch-in for each leg, like a mortise." Zip. Zip. Zip. "Then, I form a tenon at each end of the smaller logs I want for legs." Brrt. Brrt. "The legs fit tightly in the notches, but I make them more sturdy with white glue, and tap small wedges in. I figure on shaping later."



Folk art needn't imply crude construction, believes Max. Before his carvings receive paint, he carefully smoothes over the face of each one.

A bear receives ears cut on the bandsaw, as does a pig. When Max has tapped and glued in the add-ons, he goes over the entire body with the chainsaw, shaping and smoothing. In his hands, the tool performs like grassclippers. The initial smoothing done, Max grabs an electric drill and drills nostrils. For eye sockets, he entrusts the sharpened bit of a screwdriver. Then, he fills cracks and mortise joints with a mixture of sawdust and white glue. "The joints have to be flawless," he notes, carefully smoothing the fill.

Max still fusses over his animals' final sanding: "The face I make a lot smoother than the rest of body, so they look good. People look at the face and eyes first." Still, Max often turns that work over to his assistants. They go over and over the heads and bodies with grinders, then disc sanders carrying 60-grit paper, until their boss approves.

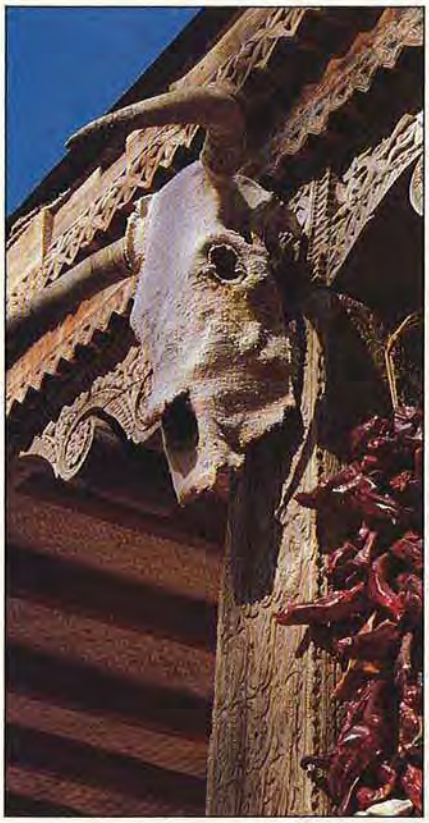
For a bright finish, Max's wife, Kathy, applies common, ordinary latex flat housepaint, which she has on hand in a spectrum of colors. "We've never used a sealer, or a primer under the paint," Max advises. "Yet, it holds up."

Standing there on his mountain top, surrounded by his folk animals, Max doesn't realize the true meaning of his words. "It holds up" applies to much more than paint. His carvings keep exiting Glorietta Pass at an astonishing rate. He ponders a break, but dismisses it.

"The carving market gets better every year," he sighs unbelieving. "I like it, it's fun, and I don't want to do anything else. Besides, I like to see something come from a dirty piece of wood that someone might only burn in the fireplace. You look at it and it looks like nothing, but I pick it up and make something out of it."

***Note:*** *Try your hand at a Southwest-style folk-art carving Max designed just for you, on page 78.*

Written by Peter J. Stephano
Photographs: Gary A. Zeff



**How a new design influence sprang from the cultural roots of Santa Fe and Taos to march with the classics**

Print this article

# WARM UP TO SOUTHWEST

In New York, cowboy boots pound Manhattan sidewalks, and pueblo pottery graces Central Park apartments. Concho belts cinch flowing denim dresses along Chicago's Michigan Avenue, and lakefront condos sport Navajo rugs beneath pastel-colored, rough-hewn tables. Detroit, Cleveland, Miami, Portland, and other cities and towns across the nation evidence the Southwest, too: new stucco homes with red tile roofs, furniture and linens in desert hues, strings of red chiles hung in kitchen windows. What is it about the sunburst colors, fanciful designs, and serene shapes stemming from Taos and Santa Fe that now appeal to a broad spectrum of consumers?

**"There's a kind of magic here and it's translated into the style. It is fresh, new, and exciting for most people. That's probably because the furniture is so real."**

—Rob Doolings, Santa Fe

We found the answer at the source. From their workshops, the craftsmen who create this new wave of furniture explained.

According to Rob Doolings, a furnituremaker and designer who markets a line from his Santa Fe studio and gallery, it's the freshness. "I think a lot of people outside of this region interpret Southwestern style as a new look. And, frankly, there hasn't been anything new in furniture for a long time. What's actually happening is that people are uncovering what I consider to be the oldest American look."

Continuing his explanation, Rob says, "What I call 'Santa Fe' style has come right from northern New Mexico, and it's really a blend of heritage: Spanish, Indian, and Anglo. It's tri-cultured and real American. And the Americana thing is really strong."

Rob moved from Boston to Santa Fe 15 years ago, and shifted from building the traditional to casting a style from the influences he discovered all around him. And now, work from his establishment, Doolings of Santa Fe (see photo *top right*), goes to 50 states, Europe, and Japan.

How did it all happen? "When I lived in the East, everything was Colonial, or Duncan Phyfe," Rob says. "There was little of those furnishing styles here. So, I said 'Let's do something people can live with no matter where,' and what I tried to do was produce something that would fit anywhere, but have a Southwestern flavor. We used all the traditional designs, applying them to a more conventional American look. We uncovered the basics, and the Easterners loved it.

"The look has spread like wildfire in the last five years," continues Rob, "and even though a lot of the interpretation isn't what I'd call correct or completely authentic, it works. New York has its own 'Southwest style,' so does California, but that's OK."

**"People are looking for a little gaiety in their home, a lighter feeling. We sell quite a few pieces to couples who may only have that one painted piece. It adds lift to their life."**

—James Rannefeld, Taos

Like bright hollyhocks against a pink adobe wall, James and Andrea Rannefeld's Southwestern-style furniture stands out in any room, anywhere. You'd think a table, such as the one embellished with Indian designs, *right*, would feel more at home in a desert ranch house, but James says that's not at all true. "Actually, the painted pieces sell better for us outside the region. Vibrant red, yellow, purple, and turquoise combinations move well. In Washington, D.C., those colors are our No.1 selling finish."

The Rannefelds take their painted-on designs from Navajo pottery motifs and petroglyphs (cave and rock drawings), and they find that people blend their painted furniture, marketed under the name *Taos Style*, with everything. "The animal figures associate well with country furniture—the pigs, horses, cows—so we sell in those markets," James explains. "And, our museum finish, a natural wax, goes well with primitive furniture. Now, we're washing our pieces white, peach, gray, and turquoise, and we sell that furniture to contemporary markets."

Until five years ago, James was crafting hardwood contemporary furniture of his design. Only occasionally did he turn out a Southwest style piece from pine, even though he lived in the middle of the influence. Then, the style took off, and the Rannefelds began producing a collection for the national market.

What's responsible for their collection's wide appeal? "I can only attribute the furniture's popularity to its classic design," James explains. "It's so simple, so basic, not convoluted. I think people are looking for something like that. Here, in Taos," he adds, "we're part of a continuing tradition. We've added our contemporary interpretation of color and size, but the basic designs haven't changed. They transcend style."

Southwest style may be a relative newcomer, but don't expect it to fade into the sunset after a few seasons. Robert Dittmer, home furnishings editor for *Better Homes & Gardens*® magazine, says that some major furniture-makers have begun to offer their versions of Southwest. "At the semi-annual furniture market in High Point, North Carolina, manufacturers, such as Lane, have already introduced collections that are their interpretations of Southwest. That's always a sign that a style has really arrived," Bob says with authority.

Photographs: Gary Zeff

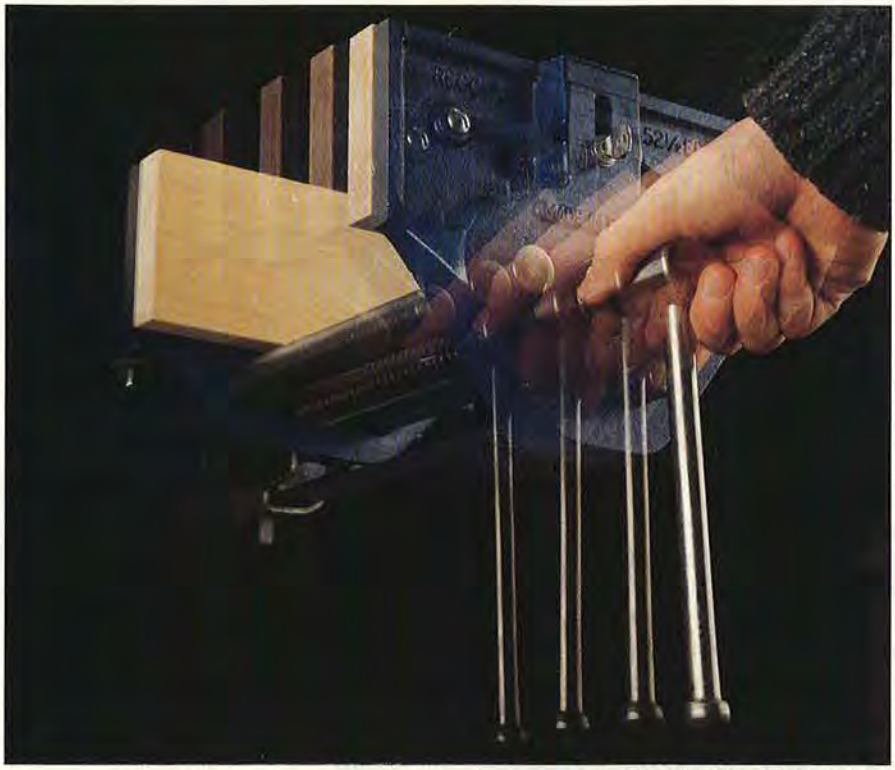
**Rob Doolings' chair and table, made from pine with a pickled finish, come from his Navajo collection.**

**A harvest table from Taos Style, decorated with petroglyphs, blends with country decor.**

***Trasteros*, such as this from the Cimarron Collection, can store clothes in a bedroom or house an entertainment system.**

# WOODWORKING VISES

## TIPS ON SELECTING THIS MUST-HAVE SHOP TOOL



Record's 9"-wide, quick-release vise: a smooth performer.

### Vises: the cornerstone of any bench

As long as woodworkers have been sawing, drilling, shaping, and smoothing stock, they've needed a means to hold that stock securely. For centuries, craftsmen depended on vises, most often all-wooden ones they meticulously fashioned themselves.

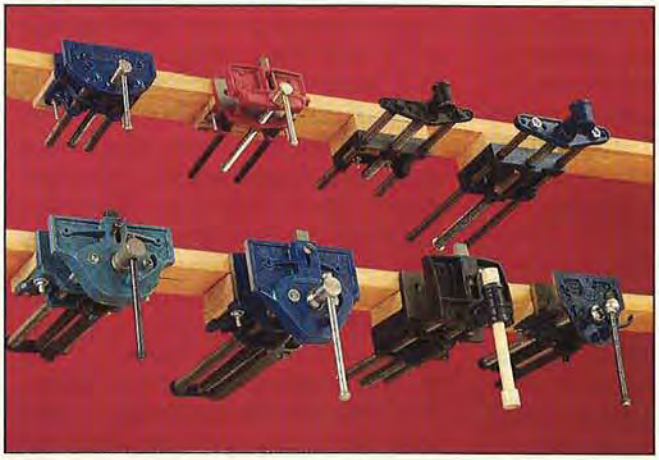
Nowadays, you can purchase metal vises that attach to your workbench with a minimum of fuss (you need only provide wooden jaws, or wooden faces to the metal jaws, and a few mounting screws). These quick-mounting units dominate today's market, so we decided to concentrate our testing on these models rather than the few vise kits available. We found the kits, which consist of as many as seven main parts plus hardware, tricky to install. Our advice: Don't try to tackle a kit unless you're prepared for a lot of work. To our amazement, the kits we looked at had no instructions, making assembly and installation a real guessing game.

### Getting a grasp on two types of vises

Trying to tell one vise from another in today's catalogs and stores can be a confusing experience. Manufacturers and retailers alike put various names on the two types of fast-mount vises, but you can quickly tell them apart visually (see the illustration at *right*).

Some retailers call the **wooden-jaw vise** a shoulder or front vise (even though it normally mounts to the end of the bench). This vise helps you secure large pieces of stock on the top of the bench because its wide jaws (up to 16") accommodate two dog holes. Those extra-wide jaws also will hold large objects between them.

On the other hand, you'll spend more time opening and closing the more-cumbersome wooden-jaw vise. Why? With the exception of the Woodcraft model 17A11, none of the wooden-jaw vises we tested had a quick-release mechanism (we'll talk about this feature in the next section).



**A cross section of vises (all shown without customer-added wooden jaws) clockwise from *upper left*: Record V175; Shopsmith CA-0123; two wooden jaw vises from Woodcraft, models 17D03 and 17A11; AMT A847; Jorgensen 40709; Record 52½D; and the Grizzly G1092.**

**If you think a vise is a vise, you're only half right. Although most vises look similar, we found plenty of differences in the way today's vises perform. And with any tool that gets as much use in your shop as a vise, it's the little things that make a difference over the years.**

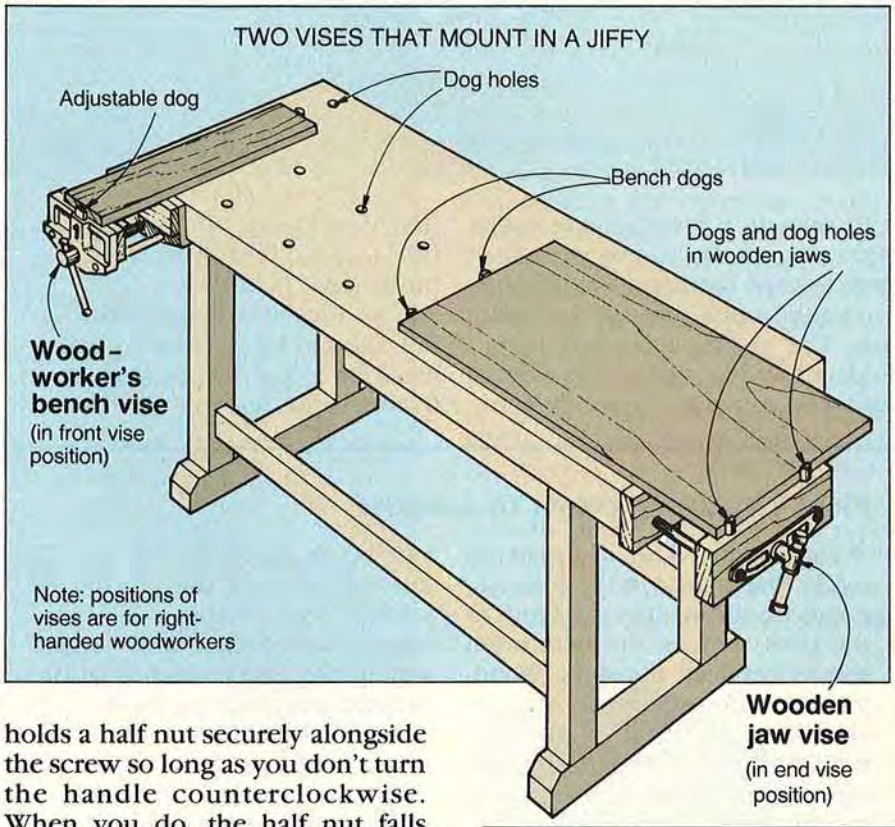
So it's no wonder that the **woodworker's bench vise** has the lion's share of today's market. Most of these vises have quick-release mechanisms, take up little space, and install in a snap. Ideally, you would have both types of vises on a bench, but if you don't have the need, money, or space for two vises, a woodworker's bench vise should be your first choice.

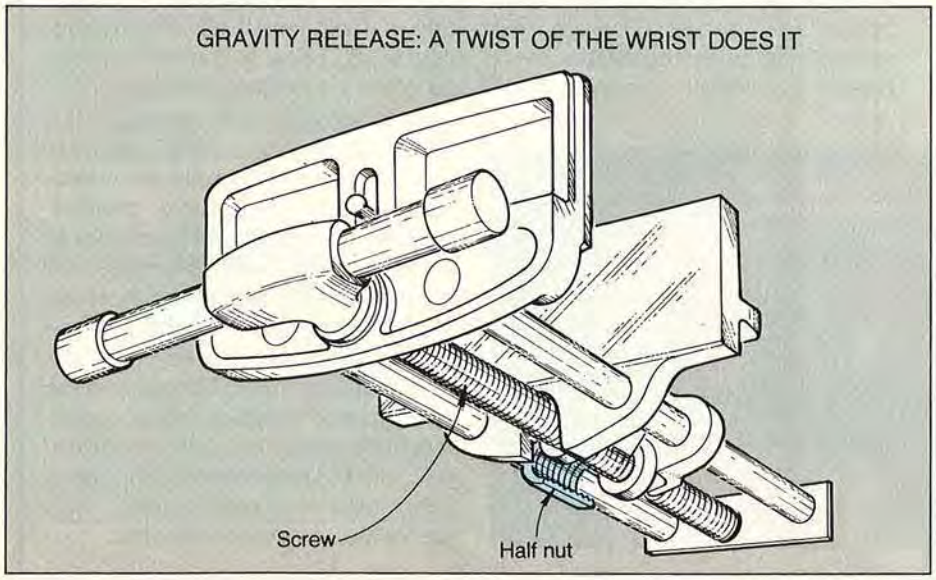
## Screw mechanisms: two types to choose between

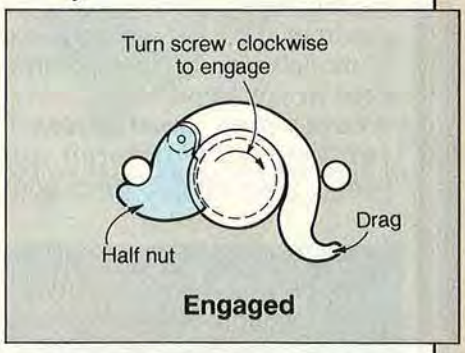
You already know how tedious it is to drive a wood screw in by hand compared to zipping it in with a power screwdriver. Likewise, cranking the handle of a plain screw vise can be equally time-consuming. That's why some manufacturers have improved on the basic screw by adding quick-release mechanisms. Both forms of this handy contraption—lever release and gravity release—temporarily disengage the screw. Disengaged this way, you can quickly move the front jaw to any position.

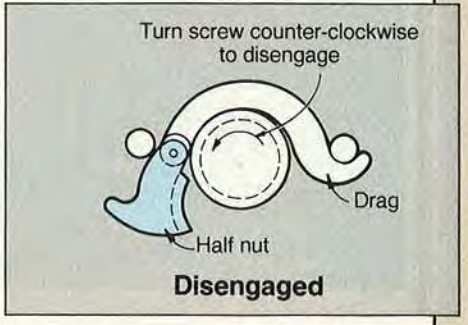
The gravity release shown *below* holds a half nut securely alongside the screw so long as you don't turn the handle counterclockwise. When you do, the half nut falls away from the screw.

*Continued*

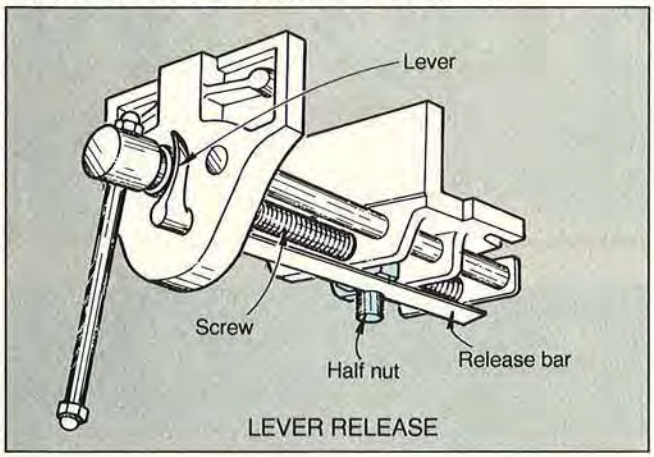

TWO VISES THAT MOUNT IN A JIFFY
Adjustable dog
Dog holes
Bench dogs
Dogs and dog holes in wooden jaws
Wood-worker's bench vise
(in front vise position)
Note: positions of vises are for right-handed woodworkers
Wooden jaw vise
(in end vise position)



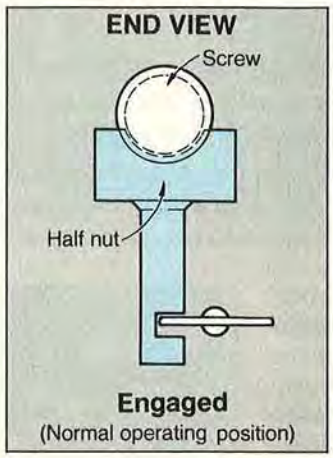



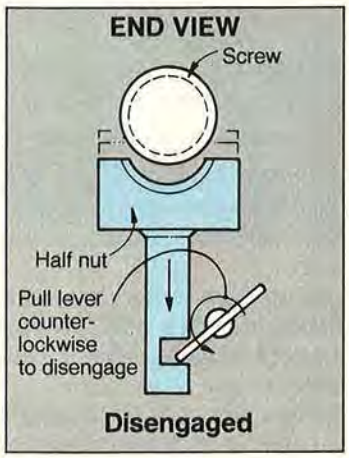
# WOODWORKING VISES



LEVER RELEASE



**Engaged**
(Normal operating position)



**Disengaged**

To operate a lever release such as the one *above,* you squeeze the lever toward the handle with one hand as you pull or push the front jaw. The spring-activated lever holds a half nut against the screw until you move the lever. Record first developed this mechanism, but several Taiwanese manufacturers have copied it.

If you're on a budget, you can buy the models without quick release for a few less bucks (about five percent less on the Record vises, for example). But, we bet that in the long run you'll thank yourself for spending the extra dollars. We found both systems to be equally reliable, but the lever releases work just a hair faster and have a more-positive feel to them.

## More vise-buying points to consider

• ***Capacity.*** The amount of stock that a vise will hold depends on the width and depth of the jaws, and on the maximum spread between the jaws. Woodworker's bench vises come in standard 6", 7", 9", and 10" widths, but we found big discrepancies in jaw depth among models of the same width. For example, the AMT and Jorgensen 7" models *below* have a 1" difference in jaw depth.

• ***Heavy-duty construction.*** If you've ever wondered how bench vises of the same width can be as much as $50 to $70 apart in price, a big part of the answer lies in the vise's construction. The same AMT-Jorgensen photo *below* also exposes heavier components in the Jorgensen vise (that sells for about twice as much as the AMT).

Close inspection of these two vises also revealed much better machining of all the parts in the Jorgenson vise—a quality that affects how smoothly the vise opens and closes. The Record vises along with the Williams & Hussey vise, which happen to be some of the most expensive, had the best machining and smoothest-working mechanisms.

• ***Built-in dogs.*** Most woodworker's bench vises have dogs that slide up from the front jaw, but as the chart at *right* shows, a few don't. Even if you currently don't have dog holes in your bench, some day you may.

• ***Sprung jaws.*** Possessing a quality some retailers call "toe-in," these jaws meet at their top edges first, with their bottom edges set back a fraction of an inch. As you tighten the vise, the bottom edges come together as well, creating an even distribution of pressure across the jaws. Non-sprung vises have parallel jaws whose entire surfaces touch at the same time. The result: greater pressure near the bottom of the jaws, closer to the screw.

• ***Handles.*** As you can see by the photo on page 42, some vises have metal handles, some have wooden handles, and wooden jaw vises come without handles (you have to make them). We prefer the wooden handles.

A side view of the AMT A847 at *left* and Jorgensen 40709 reveals striking differences in jaw depth and heftiness of components.

## GRIPPING FACTS ABOUT VISES

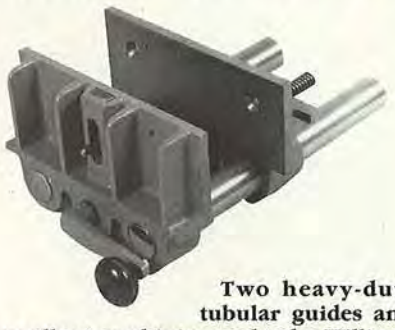
| MANUFACTURER | MODEL | TYPE[1] | RELEASE[2] | JAWS | | | | | COUNTRY OF ORIGIN[4] | PRICE[5] |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | WIDTH[3] (INCHES) | DEPTH (INCHES) | OPENING (WITHOUT WOOD FACES) (INCHES) | SPRUNG (Y,N) | FRONT DOG (Y,N) | | |
| AMT | A847 | WB | L | 7 | 3 | 9⅛ | N | N | T | 40 |
| COLUMBIAN | 11802 | WB | G# | 7 | 4 | 9 | N | Y | US | 119 |
| GARRETT WADE** | 70G03.01 | WJ | — | 10, 16 | — | 9 | — | — | C | 92 |
| GRIZZLY*** | G1072 | WB | L | 7 | 3 | 8 | N | Y | T | 43 |
| | G1092 | WB | L | 9 | 3 | 10 | N | Y | T | 60 |
| JORGENSEN | 40709 | WB | G | 7 | 4 | 9 | Y | Y | US | 90 |
| | 41012 | WB | G | 10 | 4 | 12 | Y | Y | US | 105 |
| RECORD | V175 | WB | — | 7 | 2⅞ | 6½ | N | N | E | 36 |
| | 52D | WB | L# | 7 | 2⅜ | 8 | Y | Y | E | 90 |
| | 52½D | WB | L# | 9 | 3¾ | 13 | Y | Y | E | 120 |
| | 53E | WB | L# | 10½ | 3½ | 15 | Y | N | E | 130 |
| SEARS* | 51781C | WB | G | 10 | 4 | 12 | Y | Y | US | 80 |
| SHOPSMITH | CA-0123 | WB | — | 7 | 3 | 8 | N | Y | US | 39 |
| WILLIAMS AND HUSSEY | WV83 | WB | — | 10½ | 4 | 10½ | N | Y | US | 150 |
| WILTON | 53A | WB | G# | 7 | 4 | 9 | N | Y | US | 110 |
| | 64A | WB | G# | 10 | 4⅛ | 12½ | N | Y | US | 132 |
| WOODCRAFT | 17D03 | WJ | — | 9, 14 | — | 8½ | — | — | WG | 77 |
| WOODCRAFT** | 17A11 | WJ | G | 10, 16 | — | 13½ | — | — | C | 110 |

*Similar model sold by manufacturer: Columbian.
**Vises manufactured by Cambridge.
***Similar models sold by Jet.
# Also available without quick release.
1. (WB) Woodworker's bench vise.
(WJ) Wooden jaw vise.
2. (L) Lever.
(G) Gravity.
Those without a release have a screw-only mechanism.
3. Wooden jaw vises have two dimensions—one for width of front jaw mount and second dimension for maximum width of user-added wooden jaw.
4. (C) Canada; (E) England; (T) Taiwan; (US) United States; (WG) West Germany.
5. Selling prices based on advertised prices at time of article's writing.

## Our recommendations

How much you spend on a vise depends a lot on how much money and effort you have in the bench it will attach to. If you want a vise that matches the quality of a fine-crafted bench, then nothing short of a Record or Williams & Hussey vise will do justice to your bench. All of the Columbian, Jorgensen, Sears, Wilton, and Woodcraft vises have quality construction built into them and will satisfy your needs if you prefer a gravity release mechanism. Although the Williams & Hussey vise, shown *below*, is exceptionally durable, it doesn't have a quick-release mechanism.

If you're on a budget, we feel the Grizzly vises offer the best value. These vises don't have sprung jaws, and we weren't impressed by their 3"-deep jaws, but they have respectable construction, smooth operation, and lever-type quick releases. At $43 for the 7" model, and $60 for the 9-incher, we couldn't find a better value.



**Two heavy-duty tubular guides and excellent machining make the Williams & Hussey vise sturdy and smooth.**

## Manufacturers listing

**AMT**
215/948-0400

**Columbian**
800-543-3224

**Garrett Wade**
212/807-1155

**Grizzly**
East of Mississippi:
717/326-3806
West of Mississippi:
206/647-0801

**Jorgensen**
312/666-0640

**Record**
Available through Garrett Wade, Woodcraft, and other woodworking catalogs

**Sears**
Call or visit your local store

**Shopsmith**
800-543-9396

**Williams & Hussey**
800-258-1380
N.H. residents:
603/654-6828

**Wilton**
708/934-6000

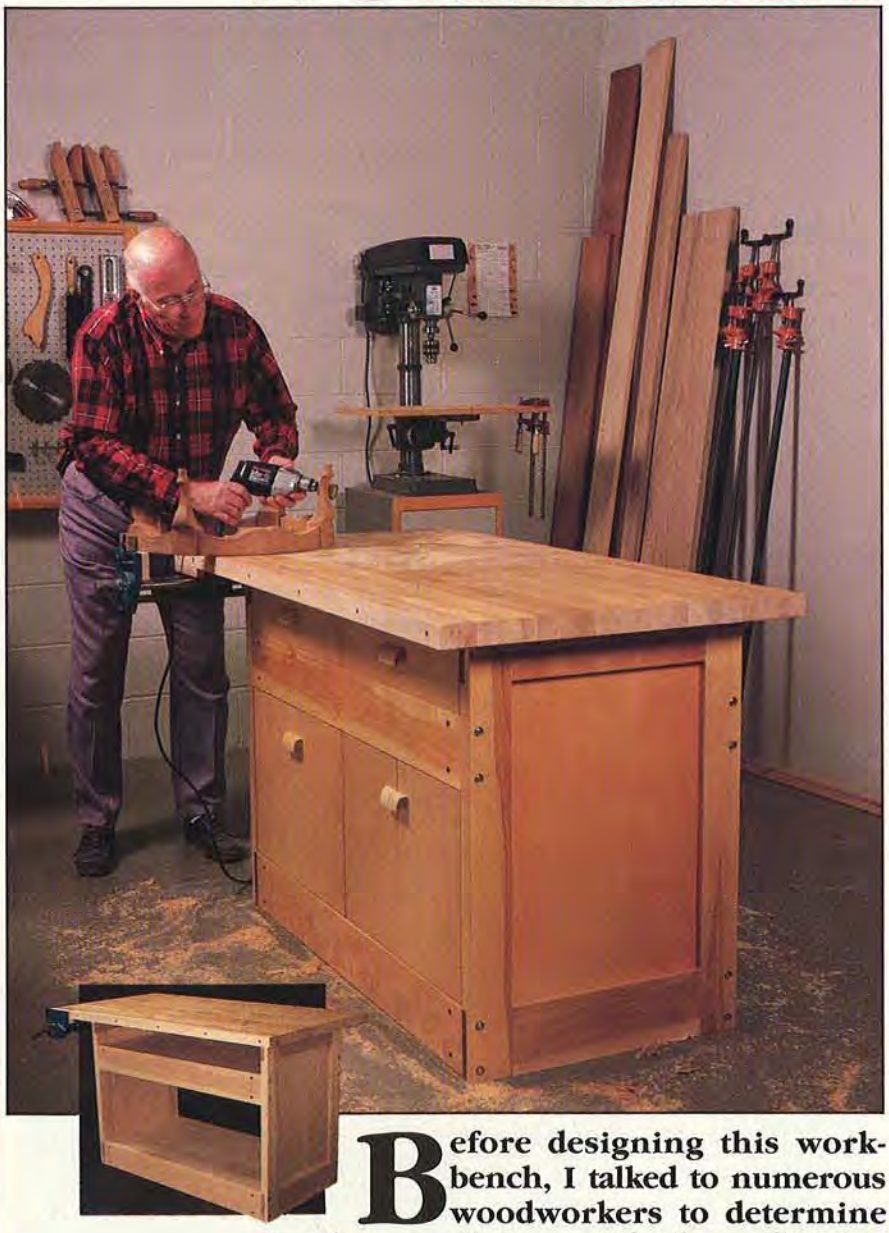
**Woodcraft**
800-225-1153
Alaska, Hawaii, and W.Va. residents:
304/428-4866

Written by Bill Krier  Technical consultant: James R. Downing  Illustrations: Kim Downing; Bill Zaun  Photographs: Bob Calmer

Print this article

BUILD ON A STRONG FOUNDATION

# LABOR-OF-LOVE WORKBENCH



**Before designing this workbench, I talked to numerous woodworkers to determine what features they wanted. Then, I headed for the drawing board. Our bench has a base that can be kept simple like the one in the inset photo. Or, build the one above with doors and drawers. I've also incorporated a large 30×60" worktop, a bench-dog-and-vise system and a board jack (see page 86).**

J. R. Downing Design Editor

*Note: For the frame members (parts A, B, C, E, F) we used 1½" birch. To save money, you could substitute pine, fir, or spruce 2×4s and 2×6s for these parts.*

## Let's start with the end panels

**1** Cut the end panel uprights (A) and rails (B, C) to the sizes listed in the Bill of Materials.

**2** Set a stop, and cut half-laps on the ends of each upright and rail. See the End Panel Drawing on the opposite page for reference.

**3** Glue and clamp together each end frame, checking for square. Later, scrape off the excess glue and sand both end frames.

**4** Mark the centerpoints for eight ¾" holes on the *outside* face of each end frame (see the End Panel Drawing for hole locations). Set a stop for consistent depths, and bore ¾" holes ⅜" deep at each marked centerpoint. (See the Corner Detail at *right* for reference.) Switch bits, and drill a ¼" hole through the stock, centered inside each ¾" hole, backing the stock with scrap to prevent chip-out.

**5** Rout a ½" rabbet along the *inside* face of each end frame where shown on the End Panel Drawing.

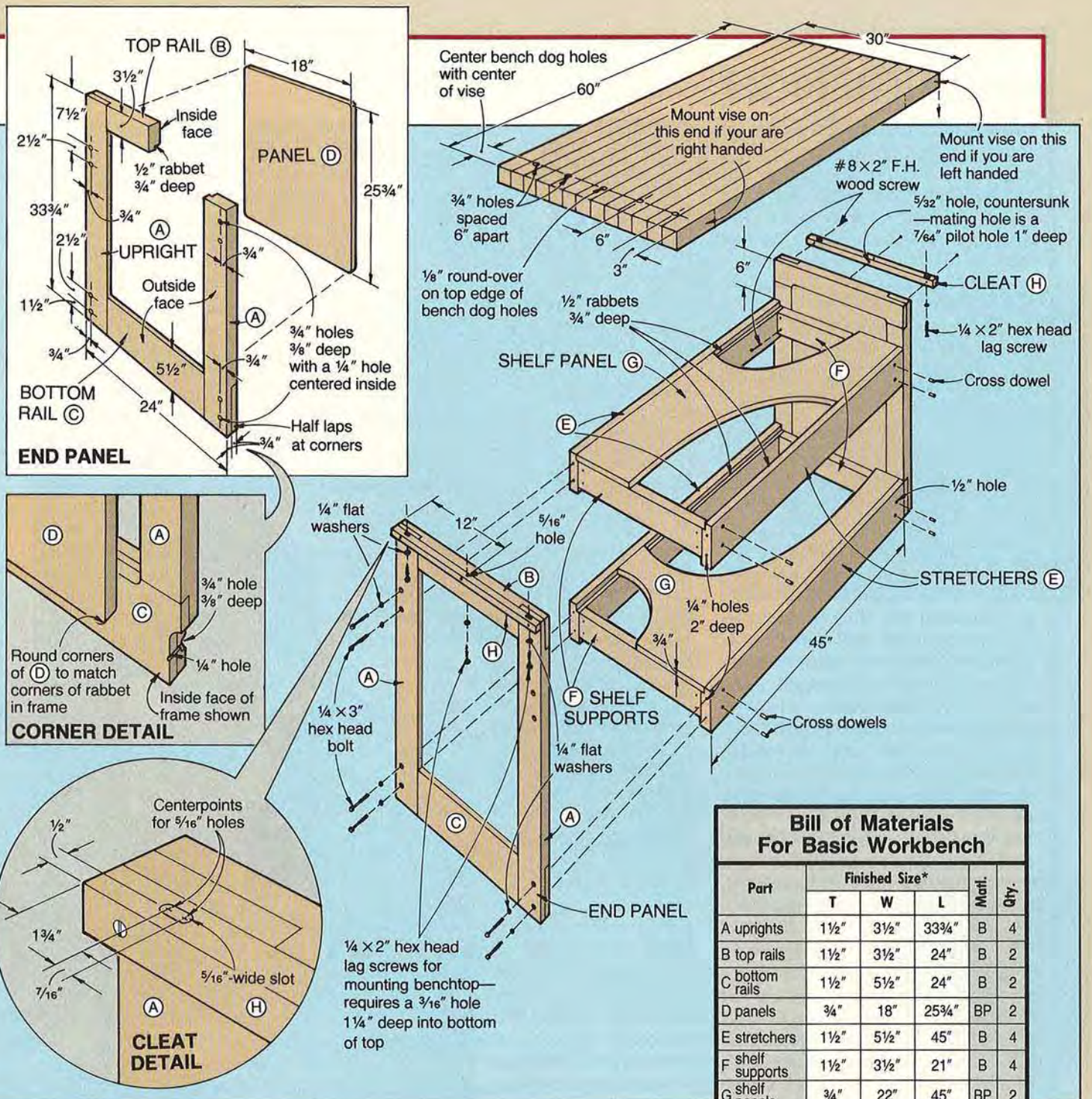
**6** Measure the rabbeted openings, and cut two pieces of ¾" plywood (D) to size. Cut or sand the square corners of the plywood panels to fit into the rounded corners of the rabbets in the end frames. Glue and clamp the plywood panels into the rabbets, and remove any excess glue with a damp cloth.

## Add the stretchers for stability

**1** Cut the stretchers (E) to size.

**2** Cut a ½" rabbet ¾" deep on the top inside edge of each stretcher. (We cut ours on the tablesaw with a dado blade; a table-mounted router fitted with a fence and straight bit also would work.)

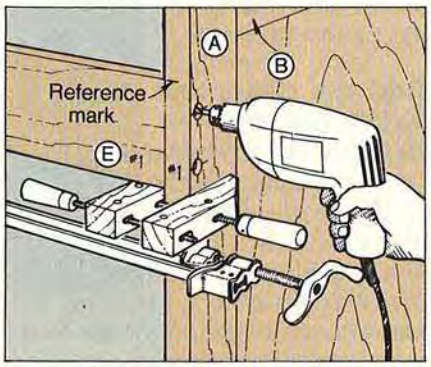
**3** Mark the locations, and dry-clamp the stretchers in place between the end panels where shown on the drawing at *right*.




**4** Using the previously drilled holes in the end-panel uprights as guides, drill a pair of ¼″ holes 2″ deep into the ends of each stretcher as shown at *right*. (If your bit is too short, drill as deep as you can and finish drilling the holes to 2″ deep after removing the clamps in the next step.)

**5** With the stretchers still dry-clamped in place, and using the drawing at *right* for reference,

*Continued*



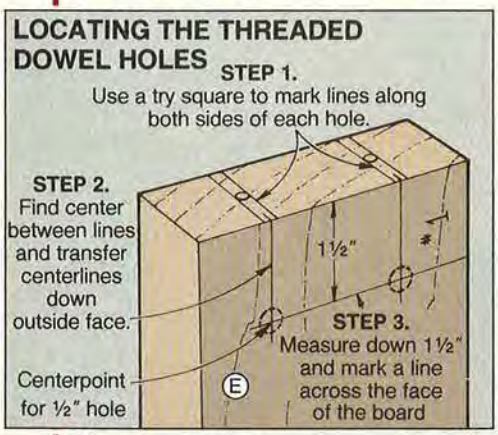

## Bill of Materials For Basic Workbench

| Part | Finished Size* | | | Matl. | Qty. |
|---|---|---|---|---|---|
| | T | W | L | | |
| A uprights | 1½″ | 3½″ | 33¾″ | B | 4 |
| B top rails | 1½″ | 3½″ | 24″ | B | 2 |
| C bottom rails | 1½″ | 5½″ | 24″ | B | 2 |
| D panels | ¾″ | 18″ | 25¾″ | BP | 2 |
| E stretchers | 1½″ | 5½″ | 45″ | B | 4 |
| F shelf supports | 1½″ | 3½″ | 21″ | B | 4 |
| G shelf panels | ¾″ | 22″ | 45″ | BP | 2 |
| H cleats | 1″ | 1″ | 24″ | B | 2 |
| I spacer block | 1¹⁄₁₆″ | 4″ | 6½″ | B | 1 |
| J*facing strip | ⅝″ | 1¾″ | 52⅞″ | B | 1 |
| K jaw liners | ¾″ | 2¾″ | 7⅛″ | B | 2 |
| L removable strip | ¾″ | 1¾ | 52⅞″ | B | 1 |

**Material key:** B-birch, BP-birch plywood
*Initially cut the part marked with an * oversized. Trim it to finished size according to the how-to instructions.

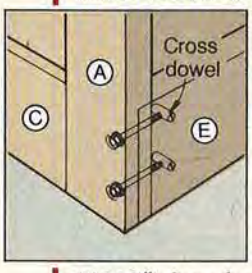
**Supplies:** #8×2″ flathead wood screws, ¼×2″ lag screws, ⅜×4″ flathead machine screws with washers and nuts, 5⁄16×1″ flathead machine screws, ¾″ dowel stock, ¼×3″ hex head bolts with flat washers, finish.

mark matching numbers and location reference lines on each stretcher end and mating upright for relocating the stretchers later. Remove the clamps and finish drilling the ¼" holes to 2" deep into the ends of each stretcher.


LOCATING THE THREADED DOWEL HOLES
STEP 1.
Use a try square to mark lines along both sides of each hole.
STEP 2.
Find center between lines and transfer centerlines down outside face.
1½"
STEP 3.
Measure down 1½" and mark a line across the face of the board
Centerpoint for ½" hole
E

**6** Following the three-step drawing *above,* mark the centerpoints for the cross-dowel holes. (When assembling the workbench later, the ¼×3" bolt threads into the cross dowels to hold the assembly together.) Then, drill ½" holes through the stretchers where marked, backing the stock with scrap to prevent chip-out.

**7** Dry-clamp the stretchers (in the same location as before) between the end panels. Insert ¼" cross dowels into the ½" holes (see the Buying Guide for our source of hardware). Bolt the end panels to the stretchers with ¼×3" hex-head bolts. (See the drawing *above left* for reference.) Thread the bolts through the cross dowels. (Be careful not to overtighten the bolts; we snapped off the head of one bolt.)




## Now, for the shelves

**1** Measure the distance between the stretchers (E), and cut the shelf supports (F) to size. Glue and screw the supports between the stretchers, with the *top edge* of the supports flush with the *bottom edge* of the rabbet cut in each stretcher. (See the Basic Bench Drawing for reference.)

**2** Measure the openings, and cut the shelf panels (G) to size. Check the fit, and then glue and clamp the panels into place.

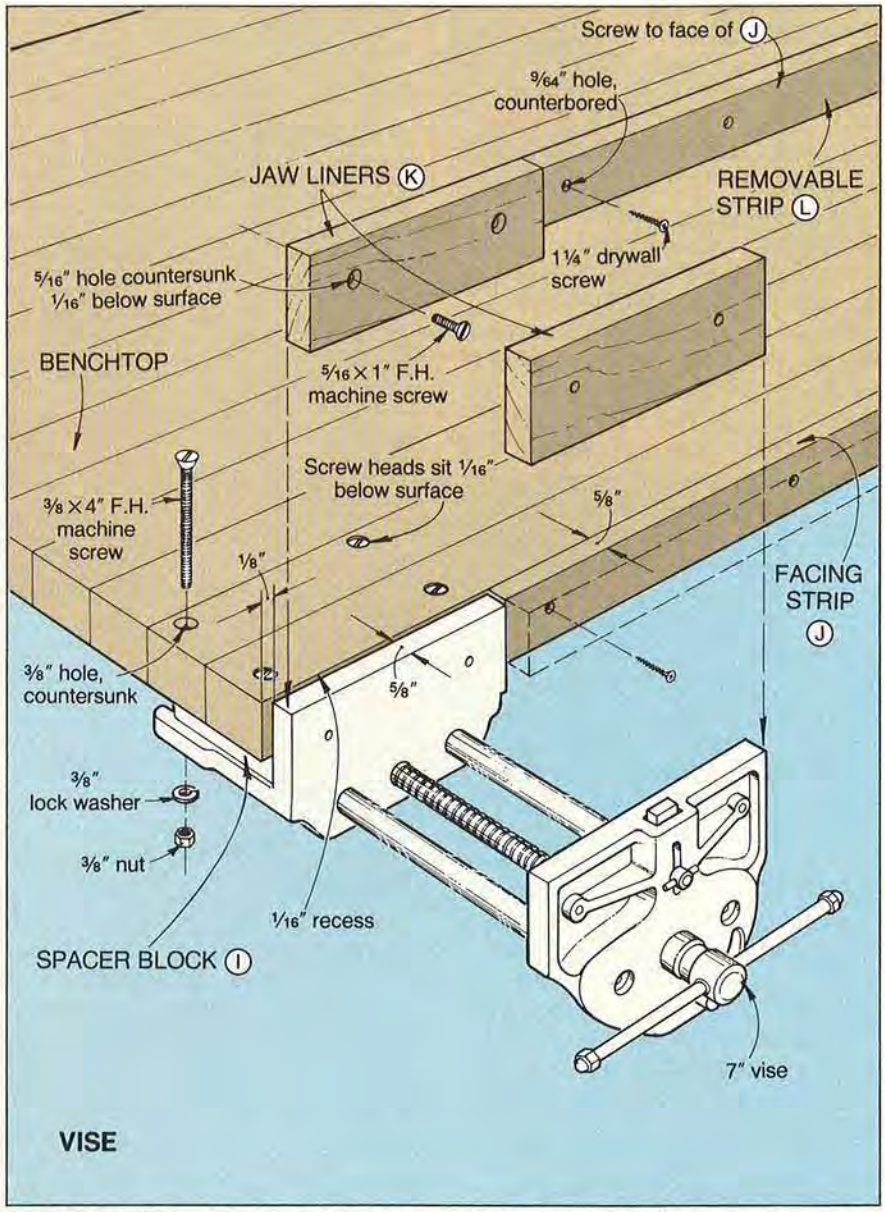
## Add the cleats and locate the vise

*Note: See the box titled Topping It Off for benchtop alternatives.*

**1** Cut the cleats (H) to size. Mark the centerpoints for the 5/16" holes on the top face of each cleat. (See the Cleat Detail accompanying the Basic Bench Drawing for the locations of the 5/16" holes needed to form the slots.) Drill the holes where marked. With a chisel, remove material between holes to form the slots. When fastening the benchtop to the cleats later, the slots allow the benchtop to expand and contract without splitting the cleat or benchtop.

**2** With the top edges flush, glue and screw the cleats (H) to the top rail (B) on the outside face of each end panel.

**3** Position the benchtop on the base and allow for a 9" overhang on the end on which you mount the vise. If you are right-handed, mount the vise on the left-hand



end. If you're left-handed, position the vise on the opposite end (same edge) and leave a 9" overhang on that end.

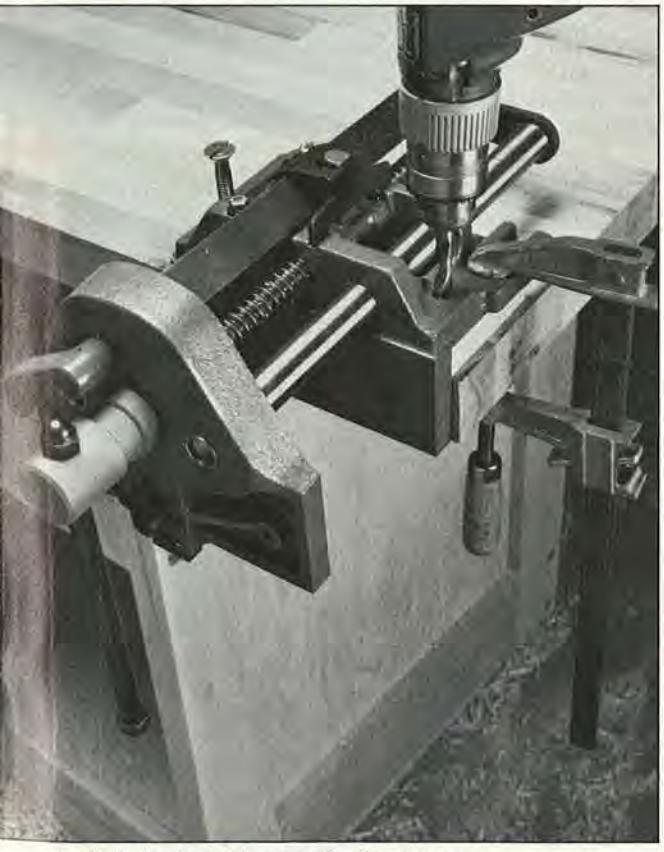
**4** With the benchtop correctly positioned, trace the outline of the bench base on the bottom of the benchtop for repositioning the benchtop on the base later.

## Let's add the vise

***Note:*** *If you plan on adding the doors and drawers, do that first, and then add the vise. The instructions for adding the doors and drawers start on page 50.*

*We cut parts I, J, K, and L to fit the vise and laminated benchtop noted in the Buying Guide. If you use a different vise and top, your dimensions may vary.*

**1** With the benchtop on the base, cut the spacer (I) to fit between the vise mount and the bottom surface of the benchtop. (See the Vise Drawing for reference. To accommodate the mounting bolts, we cut ¾×¾" notches in the back two corners of the spacer). The thickness of the spacer should drop the top edge of the vise jaws 1/16" *below* the top surface of the benchtop. The thickness of the spacer will depend on the thickness of your benchtop. The 1/16" gap prevents projects on the benchtop from contacting the metal jaws of the vise.



**With the benchtop upside down, bore the vise-mounting holes through the spacer block and benchtop.**

**2** Clamp the vise in position on the bottom surface of the worktop. With a helper, position the benchtop *upside down* on the workbench base.

**3** Using the mounting holes in the vise as guides, drill through the spacer block and benchtop, backing what will be the top of the benchtop with scrap to prevent chip-out. (See the photo at *left*.) Temporarily bolt the vise in place.

## Attach the benchtop, and add the facing strips

**1** With the aid of a helper, turn the benchtop right side up, and position it on the base, using the previously drawn outline for alignment.

**2** Using the slots and holes in the cleats as guides, drill 3/16" holes 1" deep into the bottom side of the top for the ¼×2" lag screws. Be sure to center the pilot holes in the slots. Screw (but don't glue) the benchtop to the base.

**3** Remove the vise, spacer, and mounting screws from the benchtop. So you won't scratch your projects, countersink the vise mounting holes so the mounting screws sit 1/16" below the top surface. With the spacer in place, bolt the vise to the benchtop.

**4** Measure the distance from the inside face of the metal vise jaw to the front edge of the benchtop (ours measured ⅝"). Resaw or plane a 60"-long by 1¾"-wide strip (J) to match the measured distance. See the Vise Drawing for reference. Cut the strip to length. One end of the strip should fit against the vise jaw; the other end, flush with the end of the benchtop. Glue and screw the strip to the edge of the benchtop.

**5** Cut the vise-jaw liners (K) to size. Using the Vise Drawing for reference, drill holes and fasten the liners to the vise jaws.

**6** Cut another 1¾"-wide strip from ¾" stock for the removable strip (L). (We've made the strip removable so it can be replaced should you accidentally saw into it.) Drill and counterbore holes into the removable strip where shown on the Vise Drawing. Screw (no glue) the strip to the edge of the benchtop.

*Continued*

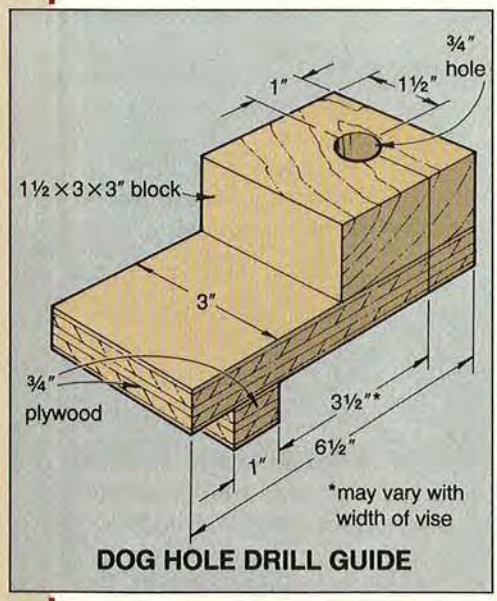
## TOPPING IT OFF

**Let your budget decide**

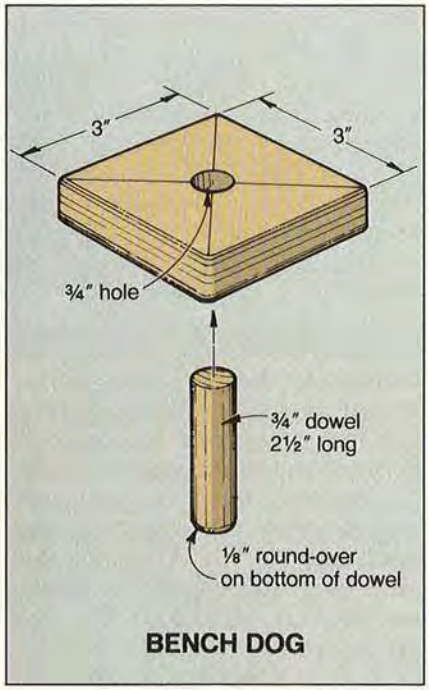
You can top a workbench in several different ways. First, you can cut forty ¾"-thick strips 1¾" wide by 60" long. With the surfaces flush, glue them together face to face in three sections. Then, glue and clamp together the three sections. Next, scrape and belt-sand the lamination smooth to form the benchtop.

You also can purchase damaged solid-core doors at most building supply centers for under $25.

See the Buying Guide on page 53 for our source of the laminated-maple top used on this workbench.



DOG HOLE DRILL GUIDE



BENCH DOG

**Locate and clamp the drill guide to the benchtop. Drill ¾" dog holes in the top.** ▶

## Time to drill the dog holes and make the bench dogs

**1** Mark the dog hole centerpoints on the benchtop where located on the Exploded-View Drawing.

**2** Build a drill guide like the one shown *above*. Then, bore ¾" holes into the benchtop as shown at *right*. The guide helps keep the holes perpendicular to the workbench surface. When boring the hole closest to the vise, bore only 1½" deep to avoid hitting the vise mount and damaging the drill bit. Back the bottom of the benchtop with scrap to prevent chip-out.

**3** Rout a ⅛" round-over on the top inside edge of each hole.

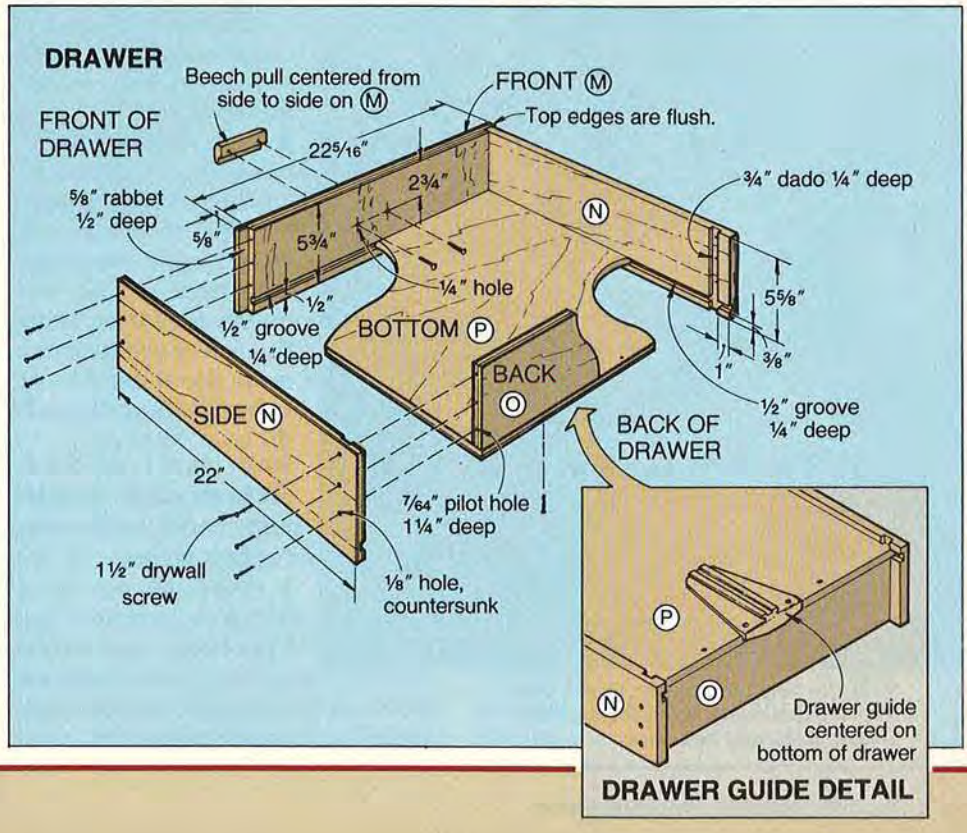
**4** To build a bench dog, cut a 3×3" square from ¾" plywood. Draw diagonal lines on the block, and bore a ¾" hole at the marked centerpoint. Sand a slight round-over on all edges of the block.

**5** Cut a ¾" oak dowel to 2½" long. Sand a round-over on the bottom end. Glue the dowel into the hole in the plywood square.

## Next, build the drawers

**1** Using the Cutting Diagram on page 52 and the Drawer Drawing at *right* for reference, cut a 6" strip off the end of a sheet of ¾" plywood. Cut the drawer fronts (M) to size.

*Continued*



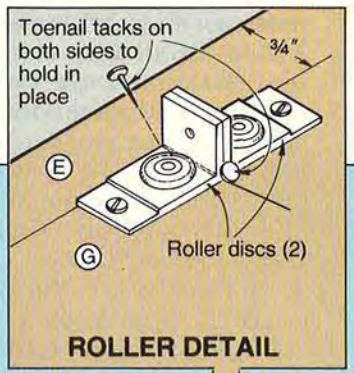
## Bill of Materials For Expanded Bench

| Part | Finished Size T | W | L | Mat. | Qty. |
|---|---|---|---|---|---|
| M drawer fronts | ¾" | 22 5/16" | 5¾" | BP | 2 |
| N drawer sides | ½" | 5⅝" | 22" | BP | 4 |
| O drawer backs | ¾" | 4¾" | 21 9/16" | BP | 2 |
| P drawer bottom | ½" | 20¾" | 21 9/16" | BP | 2 |
| Q center divider | ¾ | 21 11/16" | 21½" | BP | 1 |
| R cleats | ¾ | ¾" | 20 15/16" | B | 2 |
| S cleats | ¾" | ¾" | 22⅛" | B | 2 |
| T cleats | ¾" | ¾" | 16" | B | 2 |
| U cleats | ¾" | ¾" | 10¼" | B | 2 |

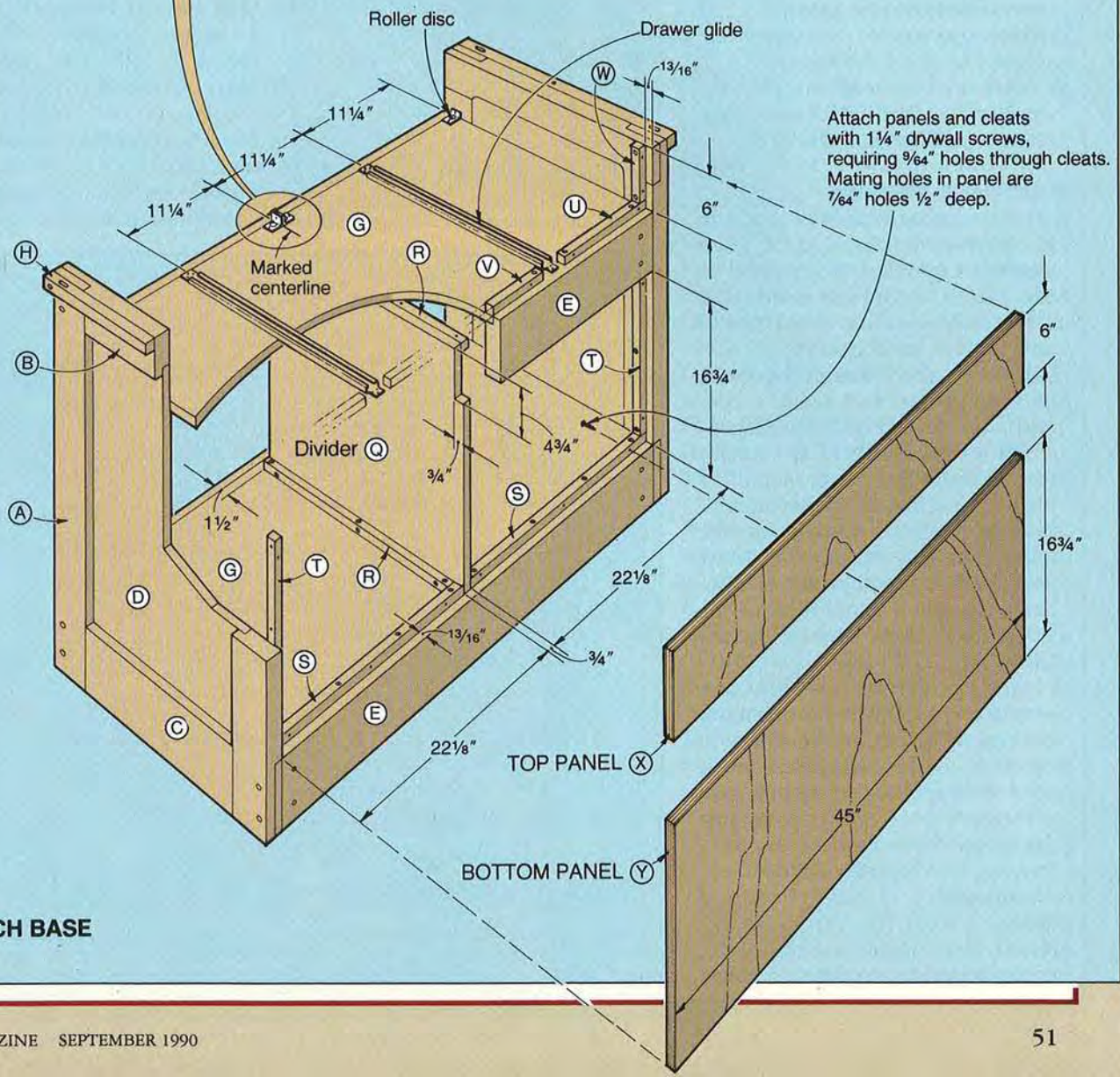
| Parts | Finished Size T | W | L | Mat. | Qty. |
|---|---|---|---|---|---|
| V cleat | ¾" | ¾" | 20½" | B | 1 |
| W cleats | ¾" | ¾" | 5¼" | B | 2 |
| X top back panel | ¾" | 45" | 6" | BP | 1 |
| Y btm. back panel | ¾" | 45" | 16¾" | BP | 1 |
| Z doors | ¾" | 11 3/32" | 16½" | BP | 4 |

**Material key:** B-birch, BP-birch plywood

**Supplies:** 1¼" flathead wood screws, #8 × 2½" flathead wood screws, ¼" flat washers, ¼ × 3" hex head bolts, ¼" cross dowels, ¼ × 2½" lag screws.




**ROLLER DETAIL**



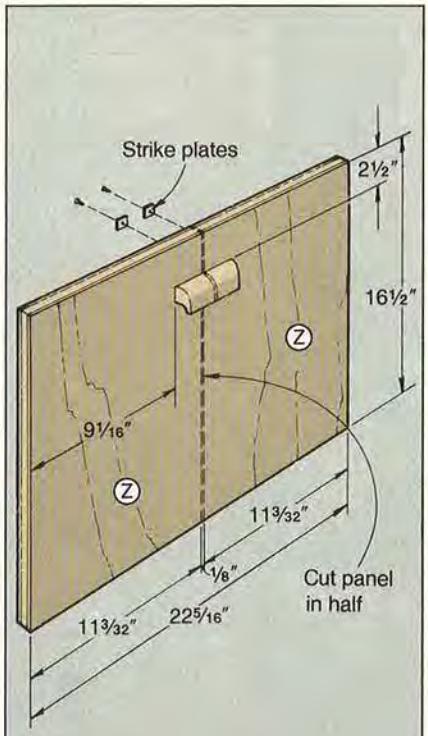

**BENCH BASE**

# WORKBENCH

**2** From ½" and ¾" plywood, cut the four drawer sides (N), back (O), and bottom (P) to size.
**3** Cut a ⅝" rabbet ½" deep along both ends of each drawer front. Machine a ¾" dado ¼" deep 1" from the back edge across each drawer side. Using the Drawer Drawing on page 50 for reference, cut a ½" groove ¼" deep ½" from the bottom edge along the inside face of the drawer front and sides.
**4** Dry-clamp the drawers together to check the fit. Trim any parts if necessary. The bottom edge of the drawer front (M) sits ⅛" lower than the bottom edge of the sides (N). Locate the centerpoints on each drawer side, and drill and countersink the holes for the 1½" screws. Remove the clamps.
**5** Glue and screw the drawer together, checking for square.
**6** Mark the centerpoints for the beech pulls. Drill the holes and fasten a pull to each drawer.

## Install the drawers

**1** Mount a plastic drawer guide to the bottom back edge of each drawer, centered from side to side. (See the Drawer Guide Detail accompanying the Drawer Drawing for reference.)
**2** Measure the distance between the end panels, and mark a centerline on the top of the shelf panel (G) where shown on the Bench Base Drawing. Attach a roller on each side of the marked centerline where shown on the Roller Detail. Now, put the drawers in position, and attach a roller disc to the shelf panel next to the end panels where shown on the Bench Base Drawing.
**3** Mark a centerline between each set of rollers. Using a square, mark the centerline from the front of the shelf to the back. Position a metal drawer glide over each line, and fasten each glide with just one screw in the middle. Fit both drawers into position and check the alignment of the rollers and glides. Adjust the glides as required. Next, install the rest of the screws to hold the glides in place.




CUTTING ONE SET OF DOORS

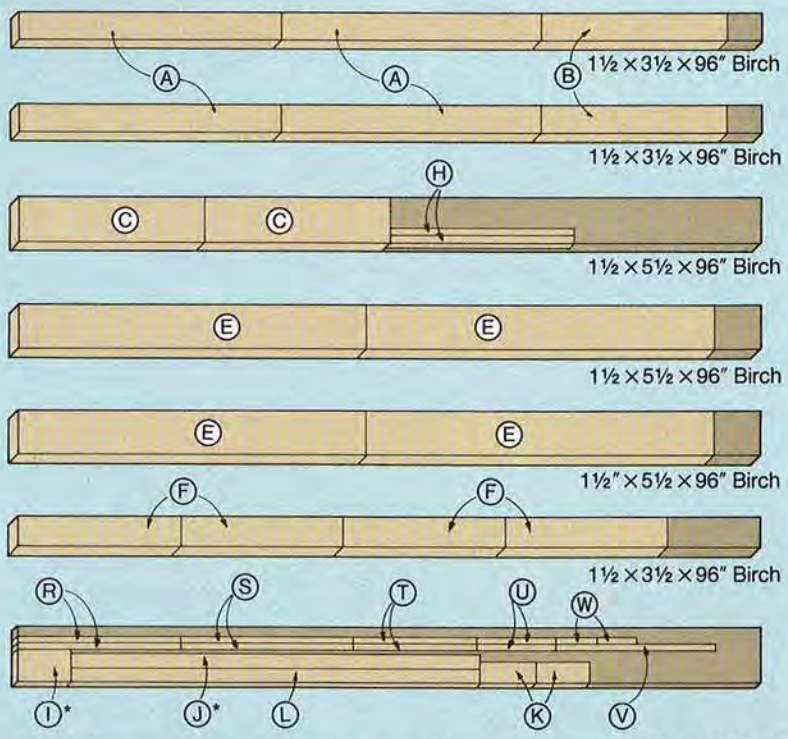
## Attach the divider, cleats, and back panels

**1** From ¾" plywood, cut the center divider (Q) to fit, cutting a notch for the back stretcher (E).
**2** Cut the divider cleats (R) to size. Glue and screw cleats to the top and bottom of the divider panel. Slip the divider into position and screw it to the shelves (G). The divider should be 13⁄16" from the back side of the cabinet and 1½" from the front.
**3** Cut and install the remaining cleats (S, T, U, V, W) 13⁄16" from the backside of the cabinet.
**4** Cut the back panels (X, Y) to size. Glue the panels in place.

## Add the doors and let's put this bench to work

**1** Cut two pieces of ¾" birch plywood to 22⁵⁄₁₆" by 16½" for the four front doors (Z) where shown on the Cutting Diagram. Mark a centerline down the center of each panel. Glue and screw a pull over this centerline where shown on the drawing at *left*.

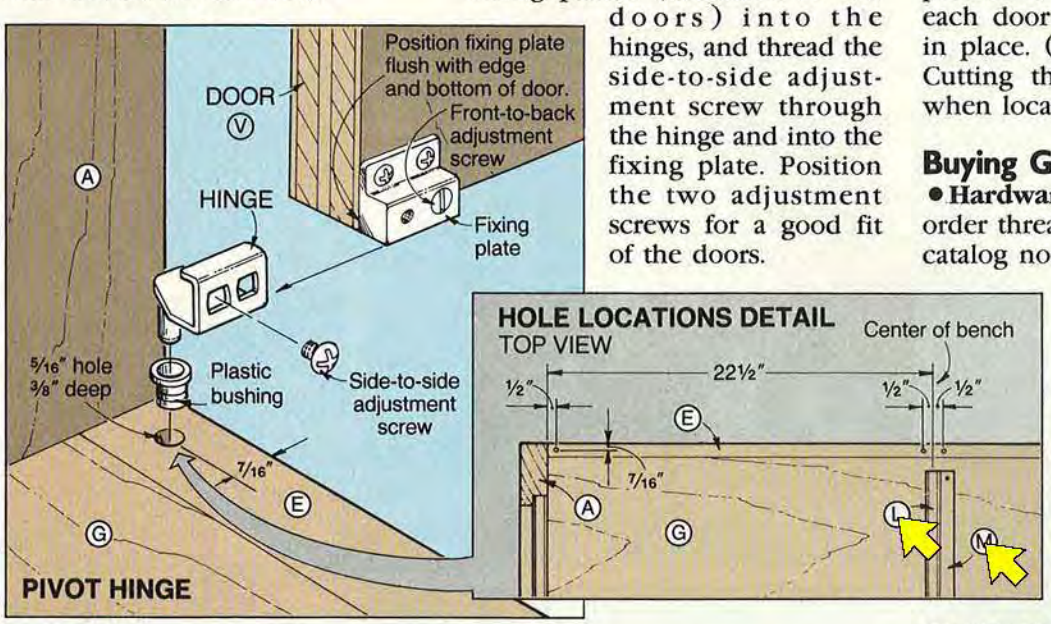
### Cutting Diagram



**2** Following the marked centerline, and cutting through the center of the pulls, cut each plywood door panel in half.

**3** Using the drawing *below* for reference, fasten a fixing plate flush with the top and bottom inside corners of each door.

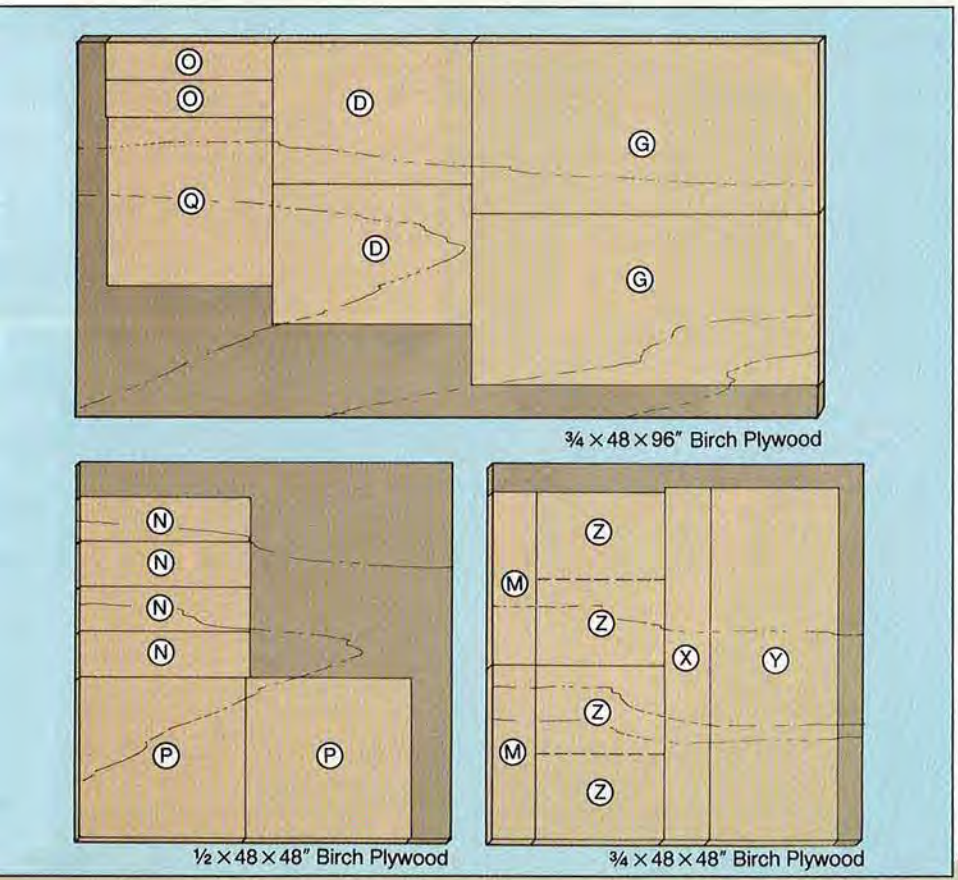
**4** Drill the holes in the stretchers (E) for the bushings. (If you need more room when drilling, loosen the hex-head bolts threaded through the cross dowels.) Insert a bushing in each hole. Push the hinges into the bushings, slide the fixing plates (attached to the doors) into the hinges, and thread the side-to-side adjustment screw through the hinge and into the fixing plate. Position the two adjustment screws for a good fit of the doors.




**5** Remove or mask all the hardware. Stain and finish. (We left ours natural—no stain—and applied several coats of polyurethane). Add the catches to the bottom of the top stretcher. Mark the mating location for the strike plates on the upper corners of each door back and fasten them in place. (See the drawing titled Cutting the Doors for reference when locating the strike plates.)

## Buying Guide

- **Hardware.** For the basic bench, order threaded steel cross dowels, catalog no. D6618, 28 cents each (16 needed). If you're building the workbench with drawers and doors, you'll need the following hardware: 1¼×4" beech pulls, catalog no. B2527, $1.70 each (four needed). Delta 100 drawer glide with low friction disc rollers, catalog no. D8400, $3.60 each (two needed). Pivot hinges and plastic bushing, catalog no. D5600, $2.95/pair (four pair needed). Magnetic catch and strike plates, catalog no. D2107, $.95 each (four needed). Add $3.50 per order for shipping. The Woodworkers' Store, 21801 Industrial Blvd., Rogers, MN 55374-9514. Or, call 612/428-2199 to order.
- **Vise.** Cast-iron, lever-type quick release, 3"-deep by 7"-wide jaws, 8" maximum opening, catalog no. G1091, $45.75 (U.S.) ppd. from Grizzly Imports, P.O. Box 2069, Bellingham, WA 98227, or call 800-541-5537 to order.
- **Laminated maple benchtop.** 1¾×30×60" butcher block, part no. BB3060, $155 (U.S.) from Dunn and Company, 97 Washington, Des Moines, IA 50314. For freight costs and ordering, call 800-728-3866.

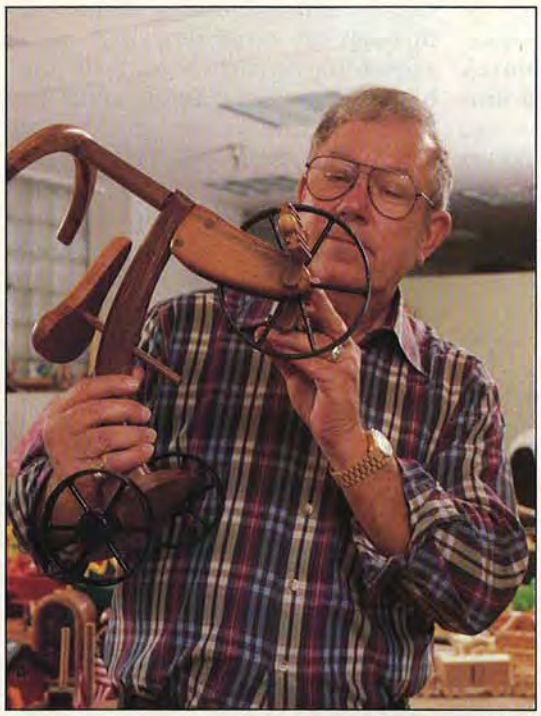


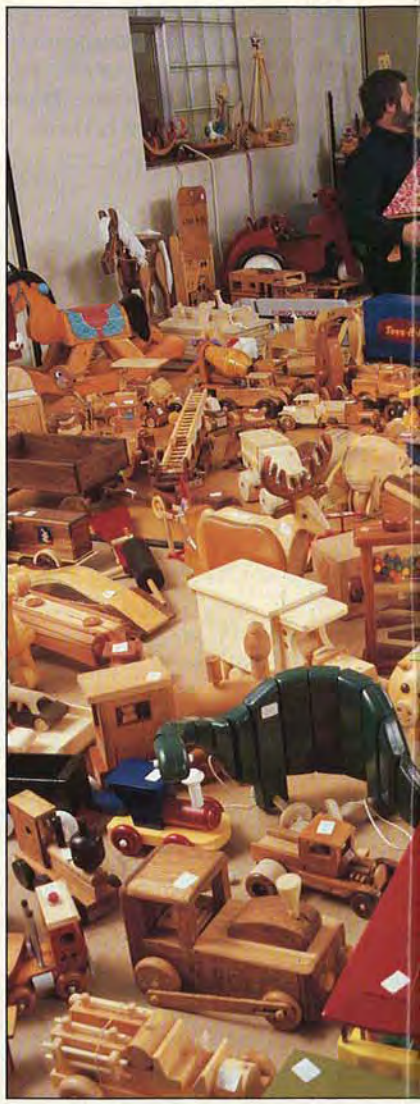

Produced by Marlen Kemmet
Project Design: James R. Downing
Photographs: Jim Kascoutas
Illustrations: Kim Downing; Bill Zaun

# And the winners are...KIDS

We loved it! Thanks to our generous readers, we had a room overflowing with 580 wooden toys awaiting judges for our second Build-A-Toy™ competition. After the judging, the U.S. Marine Corps Reserve landed and packed up toys to distribute through their Toys for Tots program.

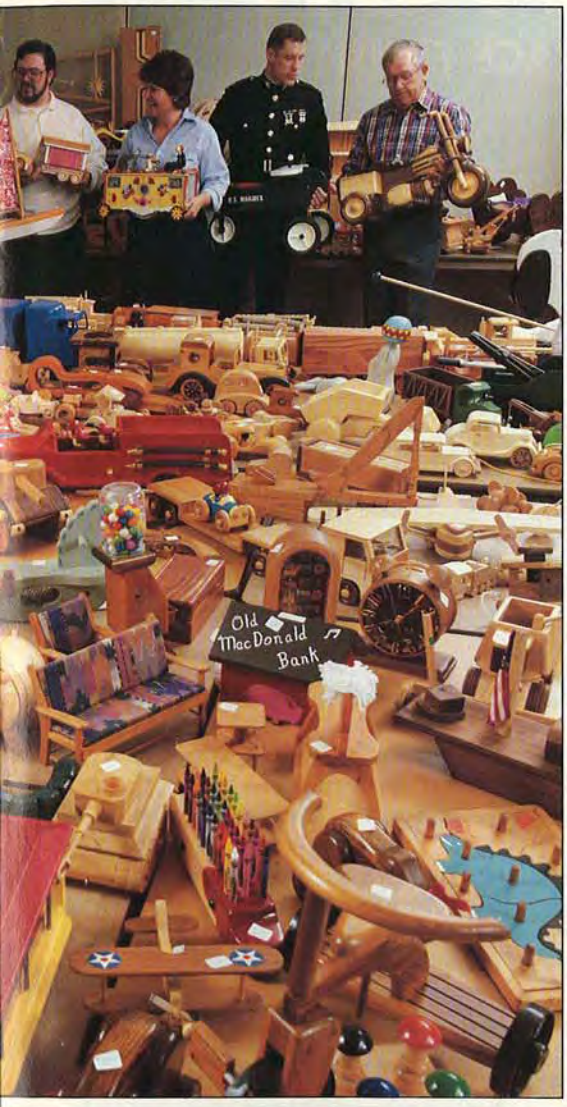
We can't furnish plans for toys shown here, but you'll find two designs published in this issue. See page 80 for the complete winners list. As a bonus, the Museum of American Folk Art in New York City will exhibit many of the top toy entries from December 6 through January 6.





Sam Roberts of Roseburg, Oregon, packed a lot of woodworking skill into a 25"-long three-wheel motorcycle. His entry won the home-hobbyist grand prize and the best-use-of-wood award.

# ACROSS THE U.S.!



Homer Formby, far left photo, and the judging committee, above, take a close look at finalists before casting their votes.

The judges, shown behind a section of toys: Jim Downing, *WOOD*® magazine design editor; Carmen Schifano, shop teacher at Chicago's Near North Career Metropolitan High School; Shelley Jones, Cherry Tree Toys art director; Major W. C. Koehler Jr., U. S. Marine Corps, and Homer Formby, one of America's most respected finishing experts.

Student entries were stronger this year, and Charlie Hardeman's tugboat was the top vote getter. Charlie, 14, built the toy in his grandfather's shop in Miami.

Bill Bruck, an industrial arts teacher in Fairfield, Ohio, built a recreational vehicle that captured the grand prize in the professional division. The roof slides off and reveals a carefully detailed interior.

Yes! *WOOD* magazine will sponsor another Build-A-Toy contest with even more prizes. Look for rules in the October 1990 issue.

# Blue Ribbon TRACTOR

## WITH A FIRST-PLACE FINISH

**Blemish-free and smooth as silk were just two of the attributes the Build-A-Toy™ judges noted when describing the finish on Jack Rowland's little tractor. In fact, the judges proclaimed this the best home-hobbyist finish, worth $1,000 in Deft merchandise. Beneath the finish, we discovered a nifty project—little wonder the tractor is a favorite with Jack's 13 grandchildren, too.**

### The chassis and body parts come first

**1** Cut the chassis (A), axle block (B), hitch (C), and seat (D) to the sizes listed in the Bill of Materials. Mark and cut the radius on the rear of the hitch where shown on the Exploded-View Drawing. Now, drill a ⅜" hole through the hitch where shown.

**2** Glue and clamp the axle block and hitch to the bottom of the chassis where shown on the Hitch Detail. Glue the seat flush with the back edge of the chassis.

**3** Mark the centerpoints and drill four axle holes ¾" deep in the chassis where located on the Exploded-View Drawing.

***Note:** Measure the diameter of your toy pegs before drilling the axle holes. We've found some that require 5/16" holes for a snug fit and others needed ⅜" holes. Test-drill holes in scrap first.*

**4** Cut the grille and firewall (E) and motor (F) to size (we laminated two ¾" pieces for the motor). Drill four 5/16" holes in the motor where shown on the drawing. Using a handsaw, cut kerfs in the grille front where shown on the drawing. Glue and clamp the parts to the chassis.

**5** Transfer the full-sized hood (G) pattern to the edge of a piece of ½" stock 2½" wide by 2¾" long. Cut it to shape. Glue the hood to the tractor assembly.

**6** Sand ⅛" round-overs on the tractor body where shown.

**7** Using the side view of the backrest (H) for reference, cut the piece to shape and sand round-overs on all but the bottom edges. Glue and clamp the backrest to the seat.

**8** Trim four 5/16 × 1 9/16" axle pegs to ⅜" long, and glue them in the holes drilled in the motor.

**9** Mark the radius, and then bandsaw the steering wheel (I) to shape from ¼" stock. Cut a piece of ¼" dowel to 1⅛" long for the steering wheel rod, and drill a ¼" hole into the tractor where shown on the Hole Detail. Glue the wheel to the dowel.

**Bill of Materials**

| | Parts | Finished Size T | W | L | | |
|---|---|---|---|---|---|---|
| A | chassis | ¾" | 2½" | 5½" | W | 1 |
| B | axle block | ¾" | ½" | 2½" | W | 1 |
| C | hitch | ¾" | ½" | 5½" | W | 1 |
| D | seat | ¾" | 1½" | 2½" | W | 1 |
| E | grille & firewall | ½" | 2½" | 1¼" | W | 2 |
| F | motor | 1½" | 1¼" | 1¾" | LW | 1 |
| G | hood | ½" | 2½" | 2¾" | W | 1 |
| H | backrest | ½" | 1⅛" | 2" | W | 1 |
| I | steering wheel | ¼" | 1¼" diam. | | W | 1 |
| J | front wheels | ¾" | 2¼" diam. | | W | 2 |
| K | back wheels | ¾" | 3½" diam. | | W | 2 |

**Material Key:** W-walnut, LW-laminated walnut
**Supplies:** ¼" dowel stock, 8—5/16 × 1 9/16" axle pegs, finish.



Print this article

## Add some wheels for traction

**1** With a circle cutter, cut the 2¼"-diameter front wheels (J) to shape. Then, counterbore a 1" hole ¼" deep on the outside face of each wheel.

**2** Using the Rear Wheel Drawing for reference, lay out the rear wheels (K) on ¾" stock, and drill four ¾" holes in each where shown. Reset the circle cutter, and cut a pair of 3½"-diameter rear wheels to shape.

**3** Redrill the ¼" pilot hole in each of the four wheels to ⅜".

**4** Rout ¼" round-overs on the outside edges of wheels. (To do this, we cut a V-shaped notch in a 20"-long piece of scrap stock and clamped it to our router table as shown in the photo at *right*. This enabled us to rout the wheels while keeping our fingers safely away from the router bit.) Now, remove the fence and round-over the edges of the ¾" holes.

## Apply the finish, and head for the north 40

**1** Sand the tractor smooth.

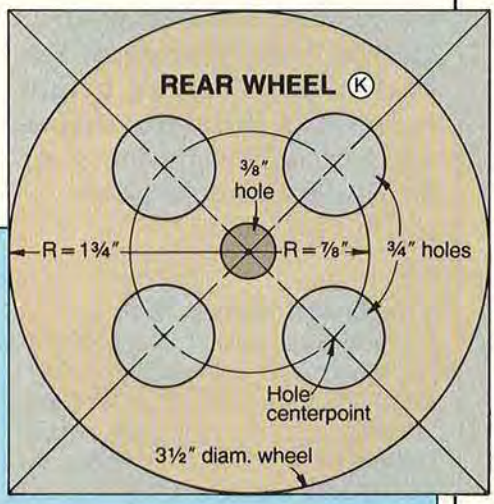
**2** Add the finish to the wheels, steering wheel, and tractor body, being careful not to get any finish in the tractor body axle or steering-wheel holes. (For his award-winning finish, Jack sands the bare wood with 280-grit paper. Then, he apply's Deft, an aerosol lacquer, and lightly sands it with 280-grit. After applying a second coat of finish, he rubs it with 0000 steel wool.) Glue and pin the wheels to the tractor body with the 5/16 × 1 9/16" axle pegs. Mount the steering wheel.

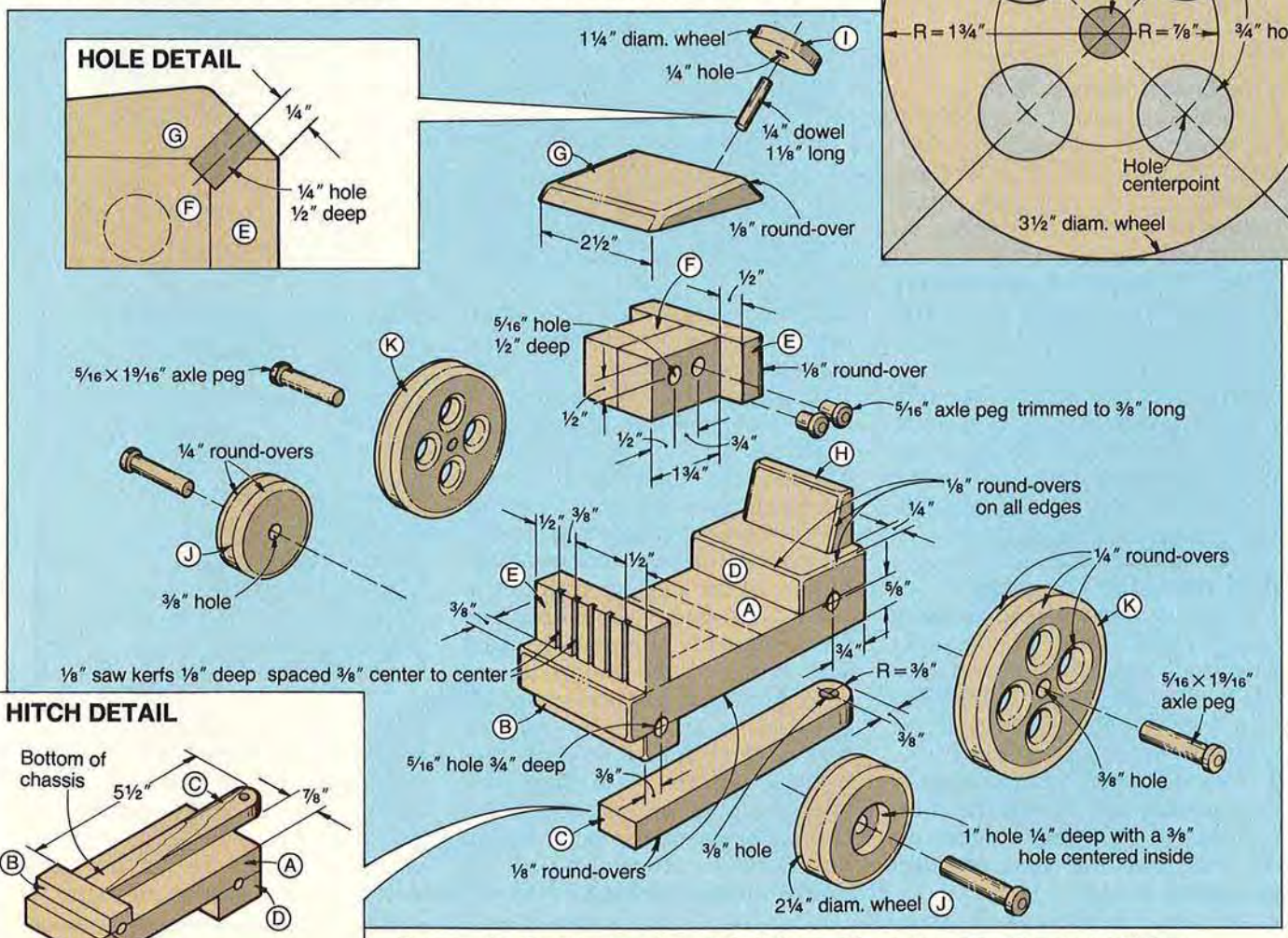
BACKREST (H)

HOOD (G)

**FULL-SIZED SIDE VIEW PATTERNS**

**For safety, use a router with a V-shaped notch when routing the wheels.**



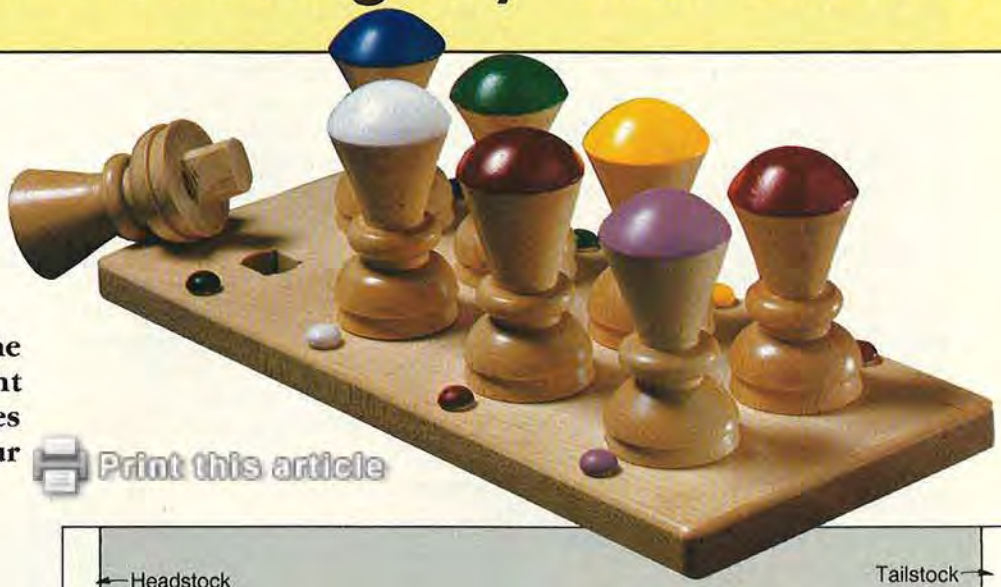




Photographs: Hopkins Associates; Bob Calmer  Illustrations: Kim Downing; Bill Zaun

# THE BOARD OF

## *A fun-to-make learning toy that teaches*

**Children who visited our Build-A-Toy™ contest room couldn't keep their hands off this learning board designed by Jerome Kobishop of Stevens Point, Wisconsin. The challenge of mating bright colors and different shapes will certainly captivate your favorite preschoolers, too.**



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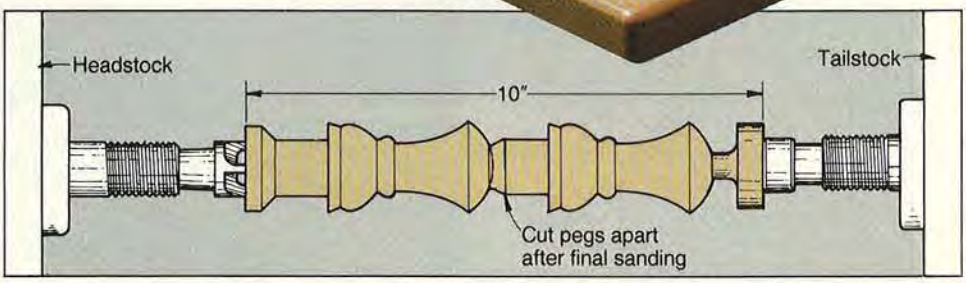



### The board comes first

**1** Rip and crosscut a piece of ¾"-thick maple to 5½" wide by 12½" long. Mark the locations for the wooden buttons and pegs where shown on the Board Drawing on the opposite page.

**2** Drill ⅜" holes ¼" deep for the buttons where marked. Then, drill the ⅝", ¾", ⅞", and 1" peg holes.

**3** Using carbon paper or a photocopy, center and transfer the full-sized peg-bottom patterns over the remaining four centerpoints. Drill blade start holes, and cut the openings to shape with a scrollsaw or coping saw.

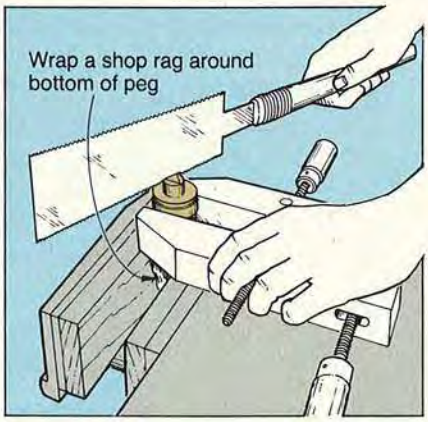
### And now, for the pegs

**1** Crosscut a 2" maple turning square to 10" long. If you don't have stock this size, laminate thinner stock. (We found it easier to turn identical-shaped pegs if we turned them two at a time.)

**2** Draw diagonals on both ends to find centers, and mount the turning square between centers on the lathe. Start the lathe, and turn the square round.

**3** Using a photocopy or carbon paper, transfer the full-sized template pattern shown on the opposite page to posterboard or hardboard, and cut the template to shape.

**4** Using the drawing *above* for reference, turn the pegs to shape. (We used a ⅜" gouge and a parting tool.) Turn the tenoned base of four of the pegs to fit into the ⅝", ¾", ⅞", and 1" hole openings (we frequently stopped the lathe and measured the round tenons with an outside calipers to ensure a good fit into their mating holes). Next, turn four pegs leaving the tenons 1" in diameter. Sand the pegs smooth and finish cutting between the pegs with a bandsaw or handsaw where shown on the drawing.



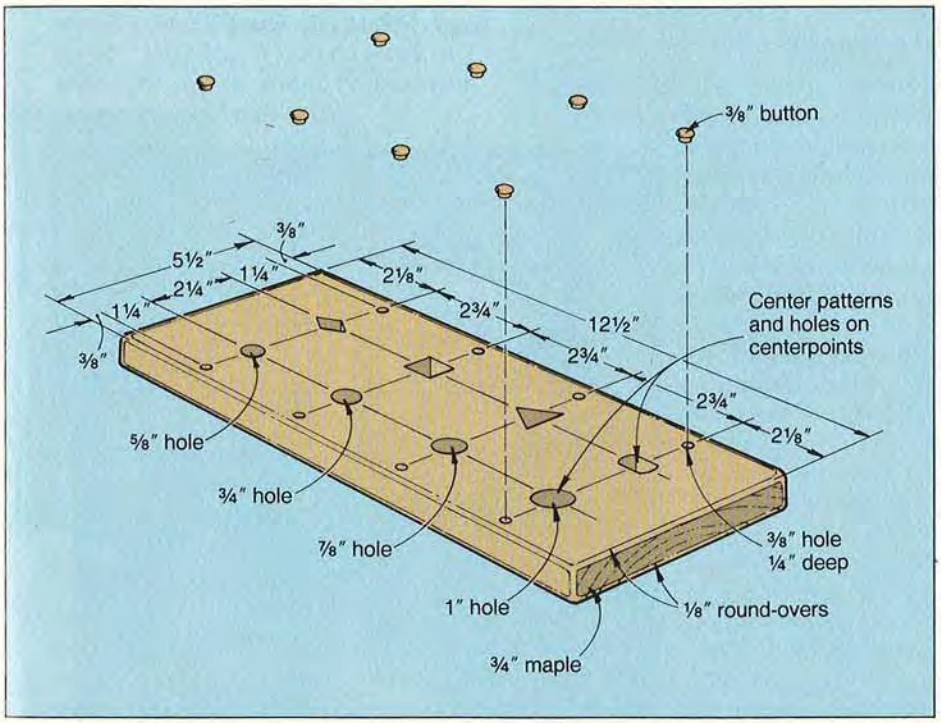

**5** Trace the four patterns onto the bottom surface of the 1" diameter tenons. As shown in the drawing *above,* wrap a cloth around the peg to prevent marring it, and clamp it steady. Use a dovetail saw to cut each tenon to shape.

# EDUCATION
## *colors and shapes*

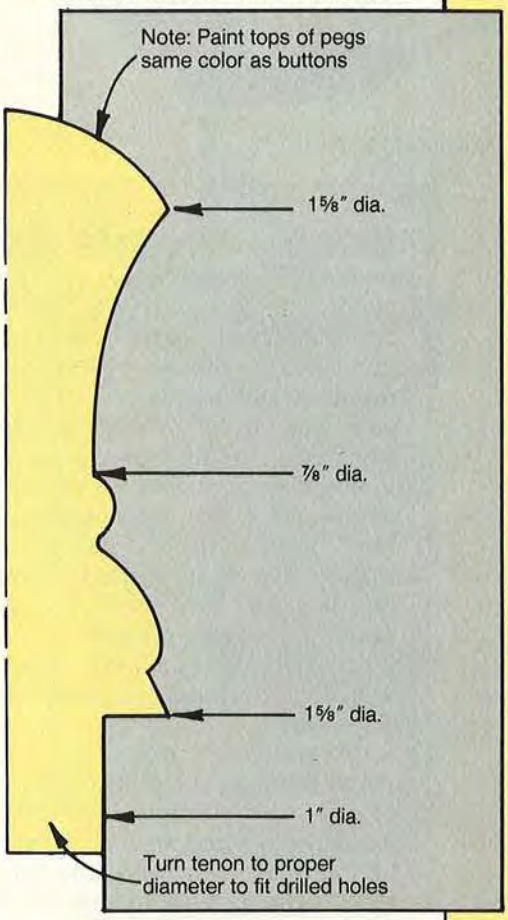
### Add the finish, and call the little ones

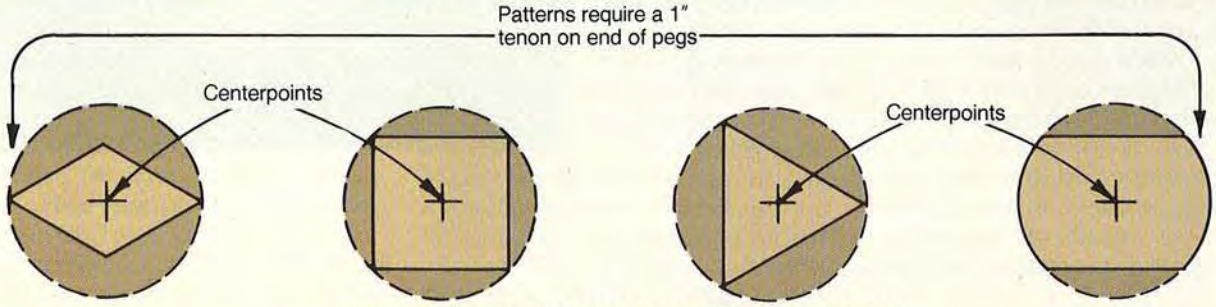
**1** Sand the board smooth. Apply a clear finish to the board and pegs. (Before applying the finish, we stuck a 1"-long piece of ⅜" dowel stock in each ⅜" hole to prevent finish from running into the button holes. We removed the dowels after the finish dried.) Steel-wool the top of the pegs and paint them (we used enamel).

**2** Paint the wood buttons to match the peg tops. Glue and tap the pegs into the ⅜" holes (we used a rubber mallet to prevent chipping the painted tops of the buttons).



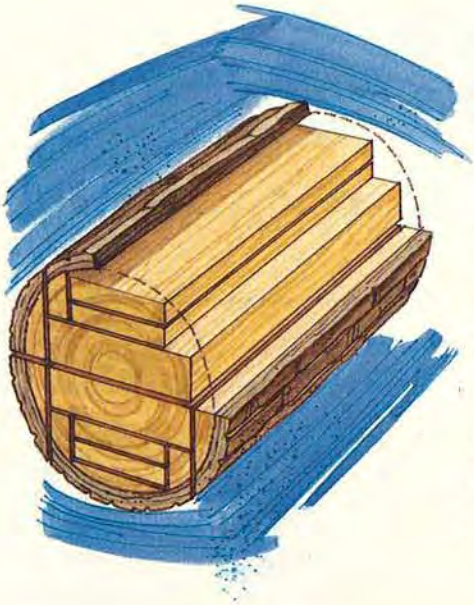

**FULL-SIZED PEG TEMPLATE**




**FULL-SIZED HOLE AND PEG END PATTERNS**

Project Design: Jerome Kobishop  Photographs: Hopkins Associates  Illustrations: Kim Downing; Bill Zaun



# HOW TO TRANSFORM FOUND WOOD INTO USABLE STOCK

**Now you can add substantially to your lumber stockpile for future projects—at little or no cost. And we think you'll have lots of fun doing it, too!**

## WOOD®—ON THE ROAD AGAIN

Over the last few years, we have published two articles about freshly cut wood—one called "Air-Drying Green Wood" (February 1987) and another titled "Harvest Your Own Bowl Blanks" (December 1987). But for me anyway, one question still remained. "How do you section and cut your way from an irregular-shaped hunk of wood to stock you can actually use to make something with?"

Not long ago, I seized my opportunity to find out. It happened when Marlen Kemmet, *WOOD* magazine's how-to editor, passed along a hot tip from two of our readers. They had spotted "some of the best quilted maple they had ever seen" less than 120 miles from Des Moines. Marlen and Jim Downing, our design editor, wanted to take a look-see, so we loaded up our gear one Saturday morning and headed down Interstate 80 to Iowa City.

It was there, all right—more freshly cut maple than we could hope to carry! After de-barking the logs and sealing their cut surfaces and end grain to prevent rapid moisture loss and further splitting, we muscled as many of them as we could into the back of Jim's pickup. (That's Jim and me hefting the logs into the truck in the photo at right. Marlen, at rest on the tailgate of Jim's truck, apparently was on his break when this photo was taken.) A few hours later, back in Des Moines, we tossed off our bounty outside the *WOOD* magazine offices. And the following Monday, we started our investigation of what turned out to be a most intriguing process.

Well, that's how our adventure began. But there's lots more to the story, so be sure to read on to find out how we transformed those big chunks of maple into workable pieces. Here's hoping you find the process as interesting as we did.

Larry Clayton

Print this article

## Start by sectioning the logs

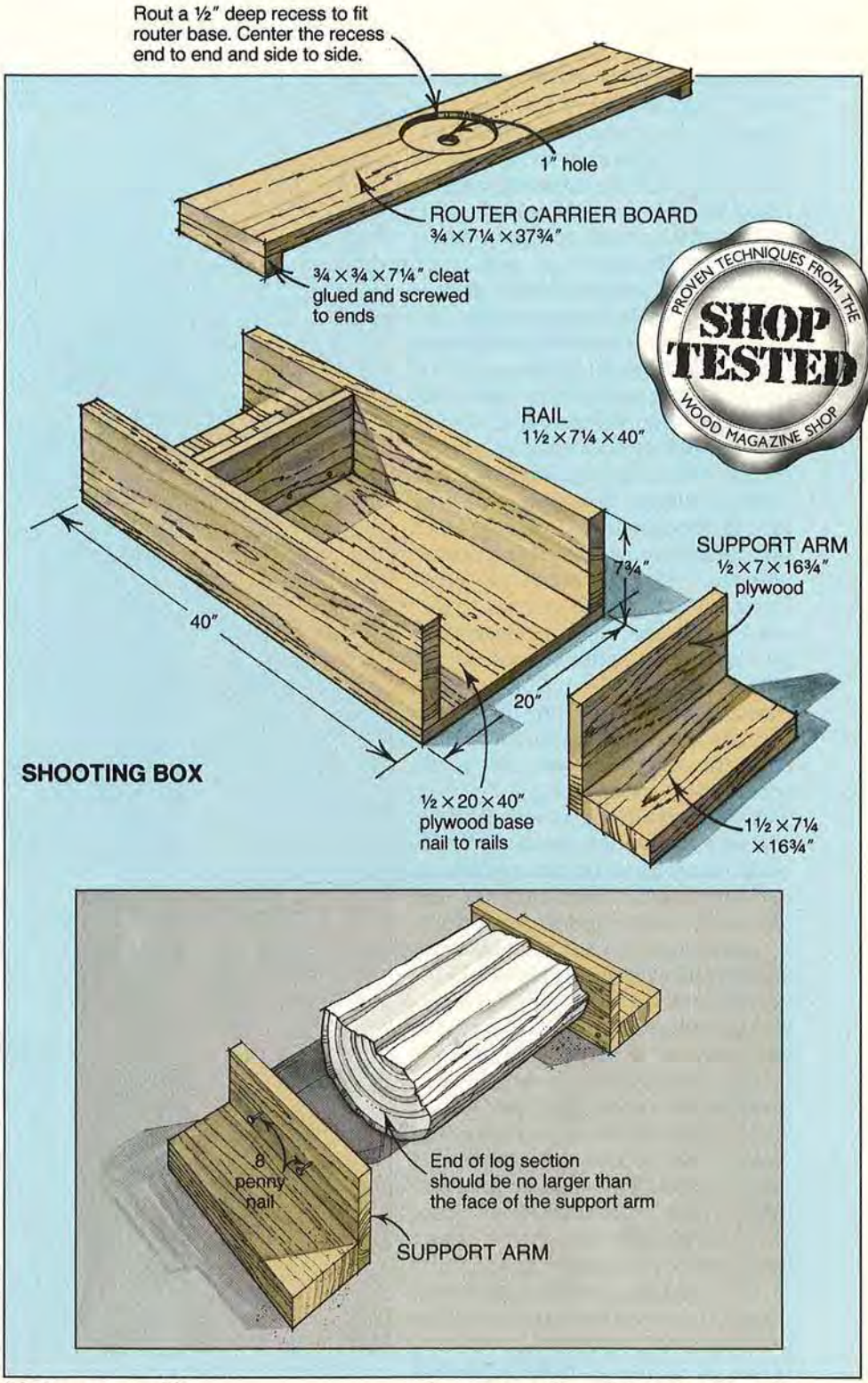
Since the slabs of wood we had lugged back to our offices were much too large to handle, our first task was to section them. And it didn't take us long to find out that you can't just divide up a log any old way you want. No, sir!

That's where knowing how to "read a log" comes in mighty handy. And fortunately for us, Jim Boelling, our project builder, has done quite a lot of log-splitting and was able to pass along some helpful tips. "Basically, you need to attack wood from its most vulnerable points—along the cracks that invariably occur during the drying process," Jim advised. "Think of it as exploiting the wood's weakness." Typically, the larger the log you're working with, the more stress cracks you will see.

Start by lifting the piece you plan to work on up to a comfortable height. (We sat ours on another slab.) Now, looking down onto the top of the log, determine which cracks you want to attack. Major fissures often will show down the side of the log as well as from the end.

Once you've settled on your course of action, begin driving a pair of wedges down into the top of the log as shown in the photo *above*. As you drive in the wedges, the sections of the log should separate; often, they pop apart under impact. Divide the log into as many sections as there are major cracks.

**Here's an important safety reminder:** Be sure to exercise all reasonable caution when sectioning your logs. Note that Jim Downing has donned a face shield to deflect flying wood chips, as well as gloves to protect his hands from a glancing blow of the sledge.


Rout a ½" deep recess to fit router base. Center the recess end to end and side to side.
1" hole
ROUTER CARRIER BOARD
¾ × 7¼ × 37¾"
¾ × ¾ × 7¼" cleat glued and screwed to ends
PROVEN TECHNIQUES FROM THE SHOP TESTED WOOD MAGAZINE SHOP
RAIL
1½ × 7¼ × 40"
SUPPORT ARM
½ × 7 × 16¾" plywood
7¾"
40"
20"
SHOOTING BOX
½ × 20 × 40" plywood base nail to rails
1½ × 7¼ × 16¾"
8 penny nail
End of log section should be no larger than the face of the support arm
SUPPORT ARM

## Make yourself a shooting box

With any luck at all, you now have several workable sections that need further processing. But wait a minute! Since none of the surfaces is flat enough to allow machining, you need to build what we call a "shooting box." This simple-to-construct jig makes it possible for you to shave one of the log's surfaces flat with the help of a router. The Exploded-View Drawing *above* shows how the various jig parts fit together.

*Continued*

# FOUND WOOD

## Processing your wood—the 5 key steps

Once you've completed construction of the shooting box, you're now ready for the exciting part—remolding those awkward-shaped pieces of wood into project material. Ready to start?

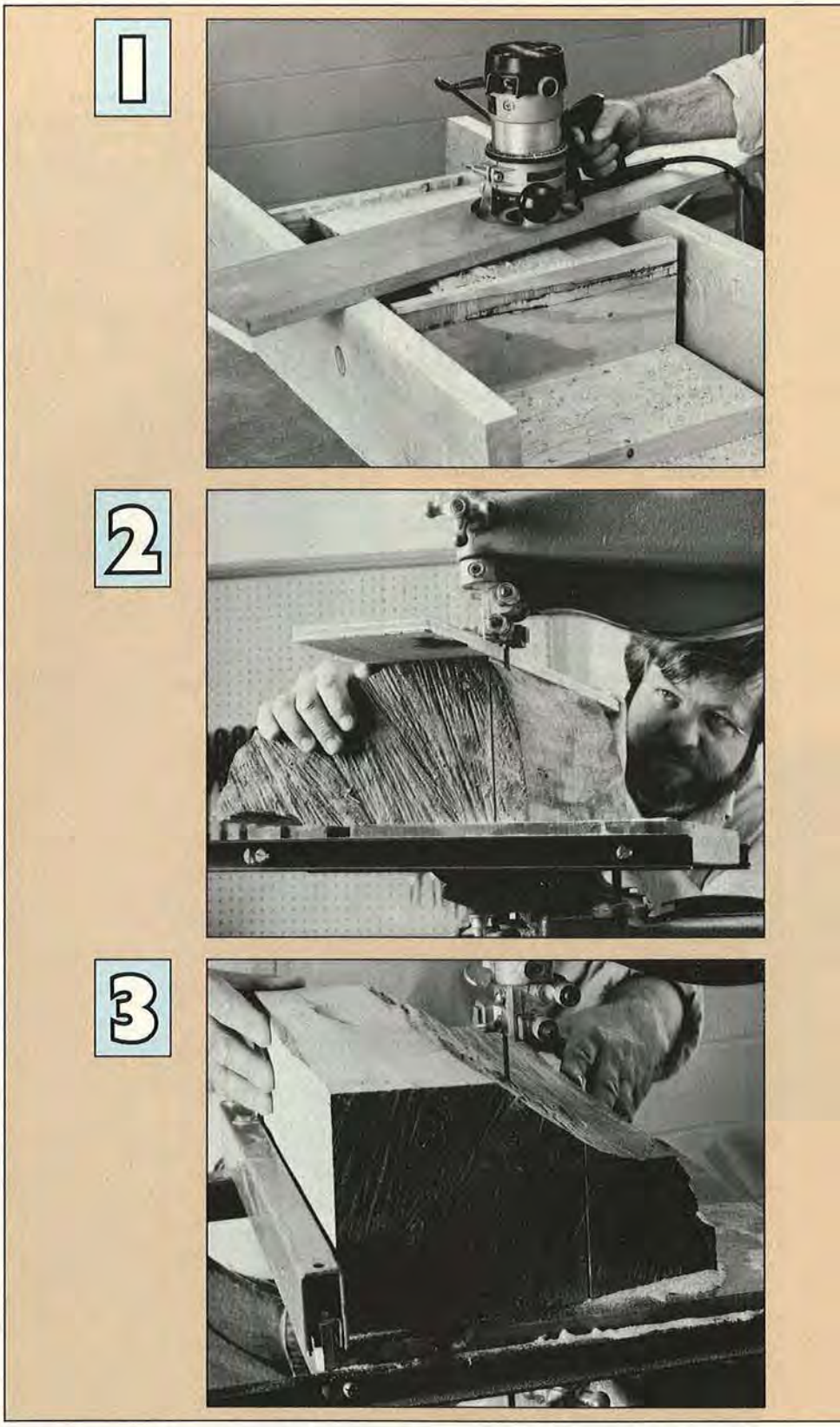
**1** Begin by nailing one of the shooting box's support arms to the log as shown in the sketch on the previous page. Make sure that the top edge of the arm extends slightly above the surface of the log. Repeat this process to attach the second arm to the log.

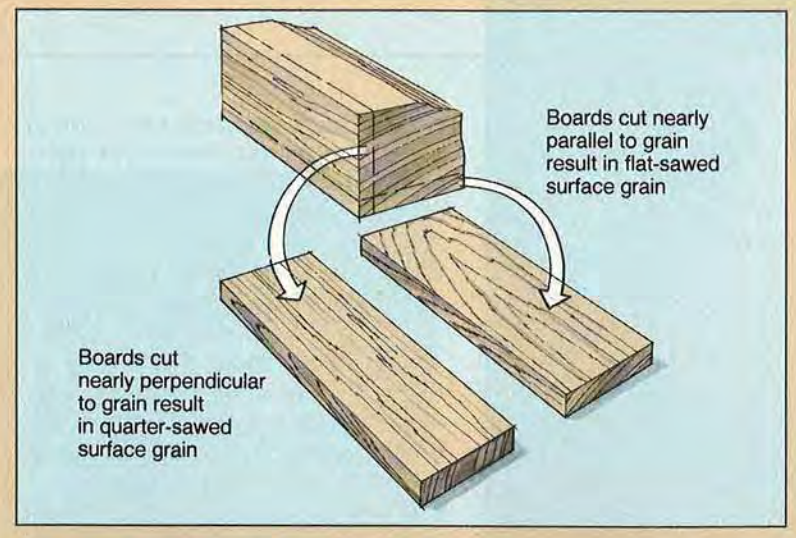
Now, lift the log into position in the shooting box. Also, locate the router-mounted carrier board atop the rails of the shooting box. Lower the router's cutter (we used a ½" carbide-tipped straight bit) so that it will remove about ¼" of material. Then, holding the router as shown in Photo 1, move the carrier board back and forth over the log until you have removed the stock.

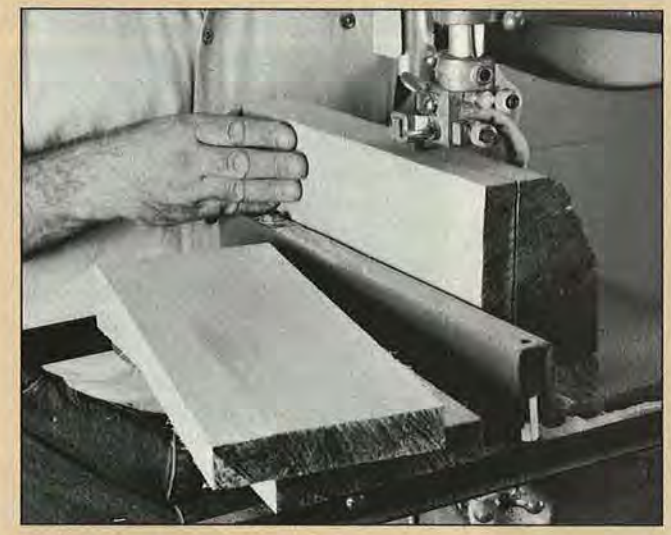
**2** Actually, from here on out, you can rely on your bandsaw, fitted with the widest blade you have, to make the remaining cuts. As you can see by looking at Photo 2, you make the next cut with the surface that you just trued-up against the bandsaw table. Use a straight-edged guide board to control your cut. Take your time here; the slower you go, the straighter your cut will be. **Note:** Due to the thickness of our log section, we had to remove a portion of it with a chainsaw prior to making the cut shown. Only then would the remaining piece pass under the upper blade guide.

**3** Next, with two (in our case, three) flat surfaces to work with, you can call on the saw's rip fence to guide your remaining cuts. To determine the maximum-width cut you can make on your machine, raise the upper blade guide up as far as possible and measure the distance from the table to the bottom of the blade guide. Then, set your rip fence that distance from the blade, and pass the stock through the saw again as shown in Photo 3.

**4** At this point, you have some decision-making to do. If you want to make turning squares or bowl blanks with the wood, simply surface the fourth edge by running it through the saw again. Then, cut the material to the desired configurations. If we had chosen to, we could have ripped the chunk shown in Photo 3 into several turning squares. Or, we could have crosscut it into a few bowl blanks. If you want to produce some flat stock, however, we rec-




Boards cut nearly parallel to grain result in flat-sawed surface grain
Boards cut nearly perpendicular to grain result in quarter-sawed surface grain



4

5

ommend that you spend some time deciding which edge of the material to cut your boards from. Why? Because how you do it will affect the appearance of your boards. As you can see by looking at the drawing *above,* if you quarter-saw the stock, you'll end up with boards that display a straight grain pattern. But if you prefer the cathedral grain pattern of flat-sawed boards, that's fine, too.

What's a good way to determine how to proceed? We've found that wetting the surfaces of the wood with a damp rag allows us to quickly see which grain pattern looks most pleasing.

Once you've made your decision, set your bandsaw's fence the desired distance from the blade. (Shrinking and additional machining will reduce each board dimension by about ⅛" or so. Be sure to allow for this reduction.) Rip the material into boards as shown in Photo 4.

**5** OK, you've finished sawing your logs into some great-looking boards of various thicknesses, and maybe even some bowl blanks and turning squares. Now what? In order to ensure that you will have usable material when it dries, you need to seal, sticker, and store the wood.

To prevent uneven drying of the material, seal all end grain as shown here with paint or one of the products designed especially for this purpose. (See the Buying Guide for the product we used.) Then, cut several thin, narrow pieces of spacer material—preferably from leftover log scraps. These so-called "stickers," when placed between each layer of stock and near the ends of the boards, allow air to move freely in and around the boards as they dry.

After stickering your freshly cut and prepared lumber, move it to a dry, moderately warm location for storing. Also, label the stacks as to species and stickering date.

How long will it be before your lumber air-dries enough to use it? That depends, but an old adage calls for one year of drying time per inch of thickness. Of course, this will vary with the drying conditions. By far the best way to judge readiness at any given time is with a moisture meter.

## Buying Guide

• **Sealtite.** Green wood sealer, catalog no. 01W61, $15.50 per gallon ppd. Woodcraft, Dept. WBH, P.O. Box 1686, Parkersburg, WV 26102-1686.

Written by Larry Clayton
Photographs: Jim Kascoutas; Bob Calmer
Illustrations: Jim Stevenson

A BEGINNER'S GUIDE TO TURNING

# WEED POTS

Rus Hurt

Like most self-taught woodturners, I've picked up my share of bad habits along the way. That's why I feel so fortunate to have been able to spend a day at the lathe with Rus Hurt, a professional turner who lives in Port Wing, Wisconsin. Rus, who has produced more than 2,000 weed pots during the past seven years, has developed a step-by-step turning method that anyone—including a beginner—can master. Following Rus's no-nonsense procedure, I now can turn out a blemish-free weed pot in less than 40 minutes. And after reading this article and turning a few practice pieces, you'll be able to do the same in no time at all.

Marlen Kemmet

How-to Editor

Print this article

***Note:*** *Sharp turning tools are a must. See the box below for reference. For additional help, refer to our Turning Basics article in the August 1985 issue of WOOD® magazine and the Hollow-Grind Sharpening article, June 1986.*

## Turn your stock round

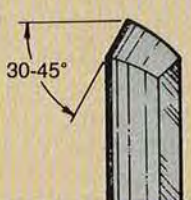
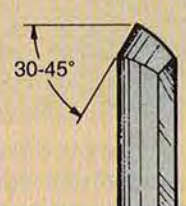
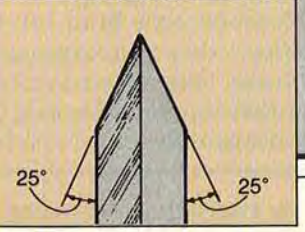
***Note:*** *If you don't have turning squares or dried firewood for your weed pot, see the Buying Guide for a source of turning squares.*

**1** Cut a piece of 3"- to 4"-square stock to 6" long. Draw diagonals on each end to find center.

**2** Mount the stock between centers, using a spur center in the headstock end and a ball-bearing cup center in the tailstock.

**3** With a ½" or ¾" gouge, turn the stock round as shown in Photo A. Bring the work into round with light cuts and a slow lathe speed of 600–800 rpm. As the piece becomes more cylindrical in shape, increase the speed to about 1,350 rpm, and take slightly heavier cuts. For stability and safety, stop the lathe and move the tool rest closer to the turning as you round down the stock.

## 3 tools do the job

| TOOL | BEVEL |
|---|---|
| ½" spindle gouge |   |
| ⅜" spindle gouge |   |
| Parting tool |   |

A

B

C

## Square both ends of the cylinder

**1** Use a ⅛" parting tool to square the headstock end (the end that will become the base) and form a tenon as shown in Photo B. Turn the tenon to fit into the hole in your drill-press table. (We checked the diameter of the tenon with an outside calipers. If your drill-press table doesn't have a hole, drill a ¾" hole through a piece of ¾" plywood. Center the hole under the chuck, and fasten the plywood to your drill-press table to form an auxiliary table.) The tenon allows you to center and stabilize the turned blank flat on your drill-press table where shown in the drawing titled Drilling the Throat Hole.

**2** Using a ⅜" gouge, form a concave bottom (up to the tenon) on the turning as shown in Photo C and Figure 1 at the *bottom* of the page. This shearing cut eliminates the torn end grain resulting from the scraping cuts made with the parting tool and results in much less sanding later. The concave bottom also helps the completed weed pot to sit level.

**3** Repeat the previous two steps to form a ¼" tenon ¼" long on the opposite end of the turning and to create a concave surface where shown in Figure 2 *below*. For a tear-free surface near the throat hole, Rus prefers to make this tenon about 1/16" smaller than the diameter of the throat hole. This allows him to remove the entire tenon when drilling the throat hole.

**4** Sand smooth the concave portion on the top of the turning. It's easier to sand this surface now, before the tenon is removed. Remove the turning from the lathe.

## Time to drill the throat hole

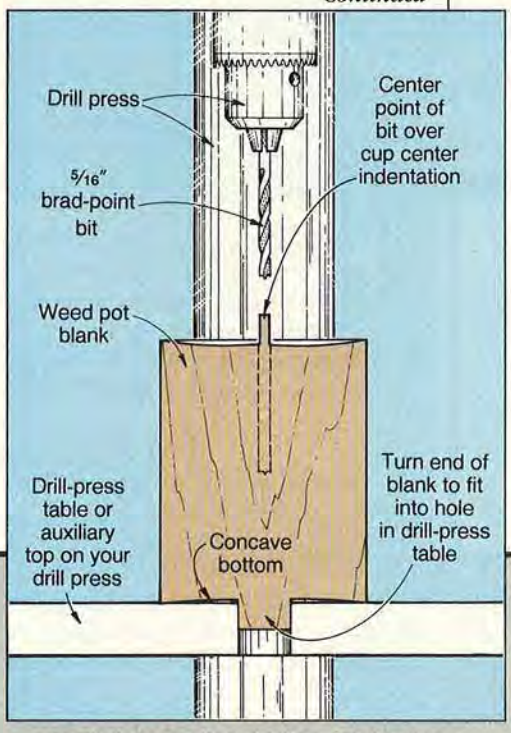
**1** Chuck a 5/16" brad-point bit into your drill press. Position the bottom tenon in the hole in your drill-press table or wooden auxiliary top. Then, center the point of the bit directly over the tailstock-center indentation where shown in the drawing *below*.

**2** With a drill-press speed of about 1,000 rpm, drill a 5/16" hole as deep as possible into the turning where shown in the drawing. For larger weed pots, you may want to increase the diameter of the throat hole. To prevent the bit from overheating, Rus raises it several times and allows the spinning bit to clean the waste from the hole and bit.

**3** To help recenter the throat-hole end of the turning on the cup center, form a countersink on the hole just drilled. To do this, stick the pointed end of a plumber's pipe reamer or large countersink in the throat hole and turn it by hand—usually about two revolutions of the reamer.

**4** Remount the turning stock between centers.

*Continued*


Drill press
5/16" brad-point bit
Weed pot blank
Drill-press table or auxiliary top on your drill press
Concave bottom
Center point of bit over cup center indentation
Turn end of blank to fit into hole in drill-press table

DRILLING THE THROAT HOLE

## HOW THE WEED POT TAKES SHAPE

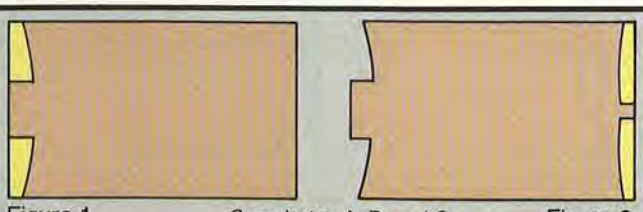


Figure 1 See photos A, B, and C Figure 2

# WEED POTS

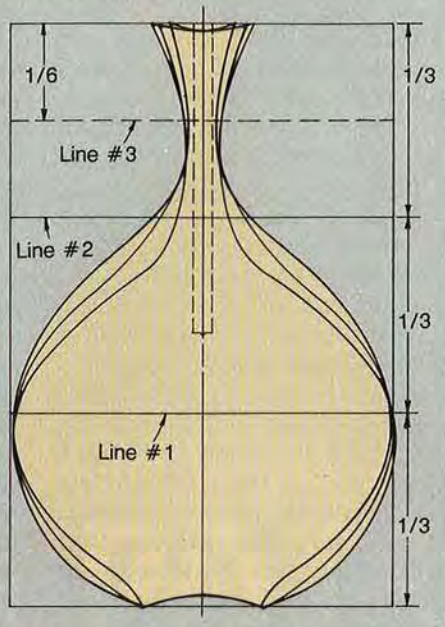
## Turn the base to rough shape

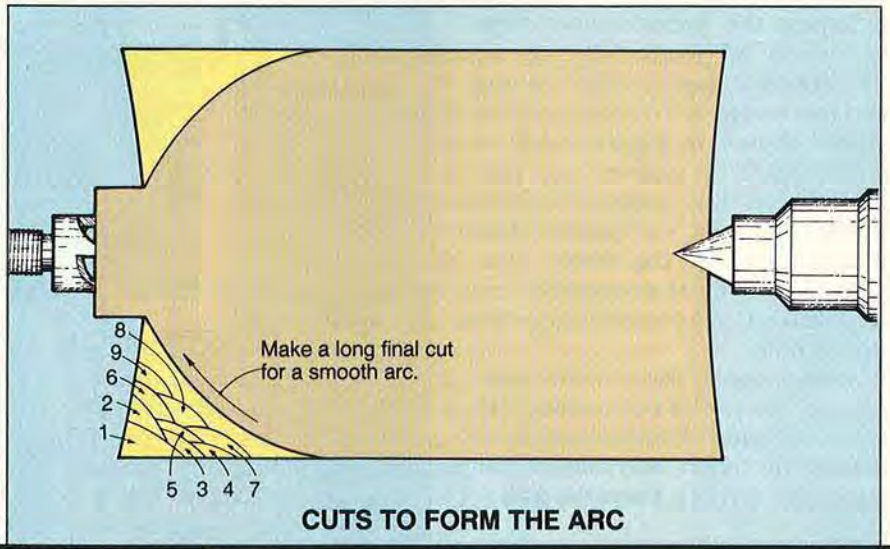
**1** Readjust the tool rest at an angle and close to the base of the turning for tool stability. See Photo D for reference. Hold a ⅜" spindle gouge in your left hand, and use your right hand to stabilize the tool shaft on the tool rest. With the cutting tip of the gouge rolled slightly on its side and angled slightly upward, shape the arc for the base of the turning. See the drawing titled Cuts to Form the Arc for reference on the sequence of cuts. Make continuous final cuts to create a smooth arc as shown in Photo D and Figure 3.

**2** Readjust your tool rest, and start on the opposite side of Line 1, making cuts toward the neck end (Line 2) as shown in Photo E and Figure 4 to form the top of the base. To accomplish this, shift the tool to the right hand and stabilize the tool shaft on the tool rest with the left hand. After making the cuts to roughly shape the arc, make final continuous arced-cuts to create the smooth shape shown in Photo E.

## Proportions: Rus's Rule of Thirds

To establish proportions for a weed pot, Rus suggests dividing the distance between the top and bottom (not including the tenons) into thirds. Then, he recommends marking reference lines on the cylinder where shown in the drawing at *right*. Line 1 (nearest the bottom) will be the widest portion of the base. Line 2 is where the squatty base narrows for the neck. Mark a third line between Line 2 and the top. This is where the neck will be at its narrowest. Remember, these are just guidelines; try slightly different shapes as shown at *right*.




CUTS TO FORM THE ARC

D

E

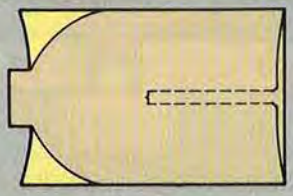


Figure 3
See photo D

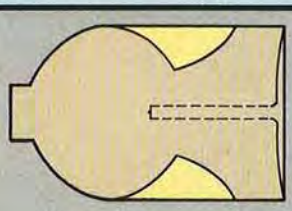


Figure 4
See photo E

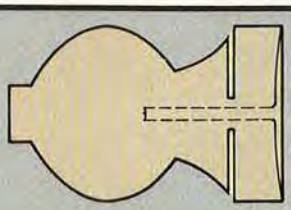


Figure 5
See photo F

## Shape the neck

**1** Start by making a reference cut at Line 3 (the thinnest portion of the neck) with the parting tool. Cut until the diameter remaining is ¾" thick. (As shown in Photo F, we used outside calipers to ensure we didn't make the reference cut too deep.) See Figure 5 for reference before making the cut.

F

**2** Start at the top of the previously formed base (Line 2), and cut toward the neck reference cut. Then, with the gouge in your left hand and using your right hand for stabilizing the tool, begin the cut at the top of the turning, and turn to the neck reference cut as shown in Photo G. See Figure 6 for assistance.

**3** Make light, curved cuts to finish shaping the neck as shown in Photo H and Figure 7.

## Sand your weed pot smooth and apply the finish

**1** Remove the tool rest from the lathe and slide the base to one side. Using progressively finer grits of sandpaper, ending with 400 grit, sand the weed pot smooth. (To protect his fingers, Rus wraps the sandpaper around a foam rubber pad, and uses a lathe speed of 800 to 1,000 rpm.) For the final sanding, stop the lathe and sand with grain to prevent sanding rings from circling the finished weed pot.

**2** While slowly rotating the stock by hand, brush on the finish as shown in Photo I. Rus prefers Deft Clear Wood Finish (lacquer). Allow the finish to dry—approximately 30 minutes.

G

H

I

**3** Running the lathe at 800 to 1,000 rpm, lightly buff the finish with 0000 steel wool.

**4** Wipe the surface with a clean cloth. (Often, Rus will dampen a cloth with Watco Satin Wax, to clean the turning. Then, he'll run the lathe, causing the liquid wax to evaporate quickly.)

**5** Apply a coat of finish wax—any furniture wax with a high carnuba content will work—to the turning (Rus uses clear Treewax). To speed the drying, run the lathe for 30 seconds, and buff with a cotton cloth.

## Parting the weed pot from the lathe

**1** Using a ⅜" gouge, reduce the size of the tenon at the base. Turn the tenon to a cone shape as shown in Photo J and Figure 7.

**2** Remove the turning from the lathe, and use a ¼" chisel to separate the tenon (don't snap it off as it may break fibers and leave an unsightly base). Sand the bottom of the weed pot. Sign and date the bottom of the weed pot, and then apply finish to the bottom.

J

## Buying Guide

• **Turning squares.** 4×4×12" piece of walnut ($18.70), maple ($8.50), mahogany ($10.50), and cherry ($11.90). Add $3.60 for shipping. Constantine, 2050 Eastchester Road, Bronx, NY 10461. Or, call 800-223-8087 to order.

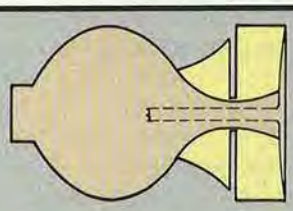


Figure 6
See photos G and H

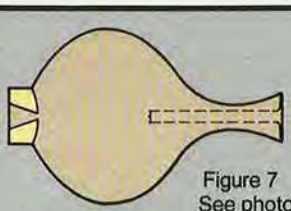


Figure 7
See photo J

Produced by Marlen Kemmet with Rus Hurt
Photographs: Peter Mettler; Bob Calmer
Illustrations: Kim Downing; Bill Zaun

A WOOD MAGAZINE SPECIAL REPORT

Print this article

# THE LOWDOWN

In New Orleans, workers unload crates of Asian hardwood plywood.

Denver-area reader Bill Heidtman was more than a little peeved when he wrote to us here at *WOOD*® magazine. He had spent a couple hundred dollars on three sheets of Taiwanese-made ¾" plywood with walnut face veneers that appeared as thick as the run-of-the-mill American variety. When it came down to sanding the cabinet parts he had made from them, though, Bill discovered the seemingly thick face veneers were actually an illusion. In fact, he accidentally sanded through the paper-thin veneer in several spots.

"If I hadn't already cut up all three panels, I would have returned them," Bill said in his letter. "The thin walnut face veneer was backed by another dark wood with the grain running the same direction." That backing fooled Bill into thinking the walnut face veneer was thicker than it really was. Bill felt so cheated that he suggested we check out this Asian plywood.

Taken at 8X magnification, the photo *left* shows Asian plywood's thin-as-a-coat-of-paint walnut face veneer. The dark substrate below the face veneer fools the eye by making the top layer appear thicker. In contrast, American-made plywood, *right,* has solid face veneer from 1/28" to 1/32" thick.

## Indonesian plywood proliferates

During the last decade, political and technological changes have resulted in correspondingly great changes in where and how plywood is manufactured. At the center of the change lies Indonesia, a nation composed of a string of islands along the equator and northwest of Australia. As part of a development plan pushed by that nation's government, Indonesia has become the largest exporter of hardwood plywood to the United States—in less than 10 years.

Since 1980, the number of lumber mills in Indonesia has jumped from nine to more than 130. These new international players now supply more than two-thirds of all the hardwood plywood imported into the U.S. by volume—and more than half by dollar

# ON ASIAN PLYWOOD

half by dollar value. Why Indonesia? The country has an abundance of lush rain forests, where a variety of hardwood species similar to Philippine mahogany grow to 200′ heights and 8′ diameters.

The trees—primarily the several species routinely called meranti (*Shorea acuminata, S. leprosula,* and others)—provide the substrate in Indonesia's burgeoning plywood industry. Because the trees are old and big, the plywood made from them has some advantages. "The meranti they use has fine grain and few knots, compared to the firs that make up the core and crossband veneers in most U.S.-produced hardwood plywood," notes Fred Geier, a buyer for Davidson PWP of Chino, California, and frequent visitor to Indonesia. "As a result, you don't have core voids like we know core voids."

Indonesian plywood bests the U.S. product in another aspect, too, say importers like Geier. It's stronger. Indonesian mills slice the core plies thinner, but use more of them than American producers. For a ¾"-thick plywood sheet, a U.S. mill glues together five crossband layers under the face veneers. Indonesians lay up seven.

## Taiwanese save face

As of this writing, almost all plywood coming out of Indonesia contains nothing but the mahogany-like wood, although a few mills began laying up plywood with North American oak and birch face veneer in 1988. Usually, though, if Indonesian plywood has face veneers of wood other than their native stock, it was added in Taiwan.

Plants in Taiwan produce large quantities of hardwood plywood panels carrying face veneers of cherry, oak, walnut, teak, and exotic woods. And, it's this Taiwanese plywood—with face veneers a scant 1/100" thick—that American hobby woodworkers swear at. Woodworkers here have been used to face veneers 1/32" thick.

"The Japanese pioneered the development of slicers that cut super-thin," says Dwight Hall of S.W. Plywood of Texas, a Houston import company. "But, it was the Taiwanese who, for competitive reasons, pushed the new technology to its limits—ones well beyond what most good craftsmen will tolerate working with."

Hall notes, though, that the Taiwanese, or any other Asian plywood manufacturer, couldn't care less about the home craftsman. "True craftsmen sand their wares, but let's face it, craftsmen do only 10, maybe 20 percent of the commercial woodworking in the U.S. anymore. It's strictly a matter of economics. Real woodworkers are well down on the list of people whom Asian hardwood plywood manufacturers need to please."

Statistics indicate that cabinet construction for new homes consumes the most hardwood plywood, followed by institutional uses, such as schools and banks, then commercial accounts including department store fixtures. Furniture manufacturing comes next. And, finally, there's us—the home-hobbyist woodworkers.

"Most large commercial cabinet shops and furniture manufacturers have gotten used to the thinner veneers," says Hall. "They don't do much sanding anyway, and rely more on sealers and topcoats to provide the smooth finish. It's like everything else today, such as plastic car bumpers and trim: It's not built like it was 20 years ago."

## Taxes trip up trade

If paper-thin veneers weren't bad enough, other factors affect this new plywood's price and availability. For instance, the falling value of the U.S. dollar has wiped out the price advantage that ¾" and ½" imported hardwood plywood held over domestic stock. And, deals between nations often affect availability.

In 1988, for example, when Indonesian mills agreed to supply China with $3 billion worth of plywood, the deal threatened a cutback of supplies to North America, according to importer Hall. But, when a Chinese import tax busted the arrangement, "more material became available for the rest of the world," he says.

Written by David Elbert
Photographs: Richard Mansur; John Limbach, Ripon Microslides

### SAWING THE SUPER-THIN

"The ultra-thin face veneer on imported hardwood plywood not only won't take much sanding, it also tends to chip easily when you cut dadoes and rabbets," advises Jim Boelling, *WOOD* magazine's project builder. "You can though, cope with it." Here are some tips Jim suggests:

- Apply masking tape over the area of the cut, then saw through the tape.
- Never force-feed the stock past the blade or bit.
- Use a router rather than a dado accessory. Even though you'll have to make several passes, a router's rotary cutting action has less tendency to tear out or chip the veneer.

And, just how do you spot Asian plywood if it fools the eye so easily? That's simple. The words "Made in Taiwan" (or Korea and elsewhere) appear on the edge of the panel. If you can't make out the stamp, ask the dealer for the product's country of origin.

# HOW

**Got a router? If so, you change router bits now and then. Do you see anything wrong with the way it's being done here?**

**4** One last finishing touch with the gouge and your decorative carving will be done. But try to finish without hurting yourself.

**All of us here at *WOOD*® magazine want you to enjoy your woodworking hobby for years to come. We invite you to use the 14 photographs shown on the following pages to test your safety savvy. Look over each situation carefully, and jot down anything that doesn't look quite right. Then, compare your notes with the answers that appear in the far-right column of pages 71 and 73. For an added measure of safety, review the workshop emergency chart on page 96.**

# SAFE ARE YOUR WOODWORKING HABITS?

**2** With the bit securely locked in the collet, you're ready to rout.

**3** Aah, you say, nothing could be simpler than touching up the edge of a cutting tool on a grinder. We beg to differ.

**5** Another common and simple procedure—cutting off a board. Still, there's a right way and a wrong way, and this isn't the right way.

**6** The advantage of plywood is that it comes in big sheets. That's also the disadvantage. Find a better way to make rough cuts.

## WHAT'S YOUR SAFETY IQ?

Chalk up one point for each mistake that you caught and we described. Total your score and see the ratings on page 73.

**Bonus points:** If you noticed that our man's clothing was dangerously loose in several pictures, give yourself an extra point. And, if you noted his jewelry and thought he'd be better off without it, score another point.

**1** Always unplug your router before changing bits. And, clean clutter out of the way. If this router were to rock against the adjustable clamp, the switch could click ON.

**2** Nice goggles, but it's not the top of your head we're most concerned about here. Always put them over your eyes. Also, clamp that board securely, and chuck the entire router shank into the collet.

**3** No matter how steady your hands are, they're not as steady as a tool rest. Lower that shield in place, too. And while you're at it, pop a bulb into that fixture. Oops! Don't forget to wear those goggles!

**4** Experienced carvers know the importance of clamping down the workpiece. First, doing so prevents the work from moving around. And second, clamps allow you to keep your free hand away from the tool.

**5** This situation cries out for clamps. And, get the power cord away from the cutting path of the blade.

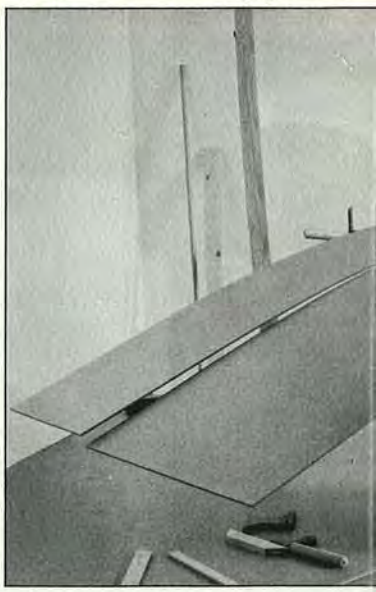
**6** Lots of errors here: Failure to support and clamp the end of the panel, overreaching, and neglecting to keep the power cord out of the saw kerf. By the way, pardon our careless woodworker if he thinks it's kind of foggy in his shop—he hasn't cleaned his face shield in weeks.

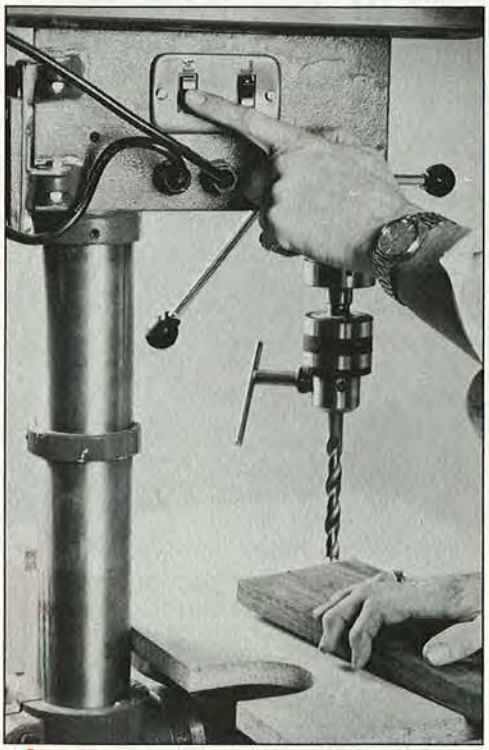
*Continued*

**7** It's so easy to turn on the belt sander and quickly remove stock. But what risks do you run?

**8** You operate the tablesaw so much that you assume you're using it safely, right?

**9** Back to the tablesaw again. Now, let's put that popular material, plywood,





**11** It is so tempting to make quick work of boring some dowel holes with the drill press. But you know where temptation leads.

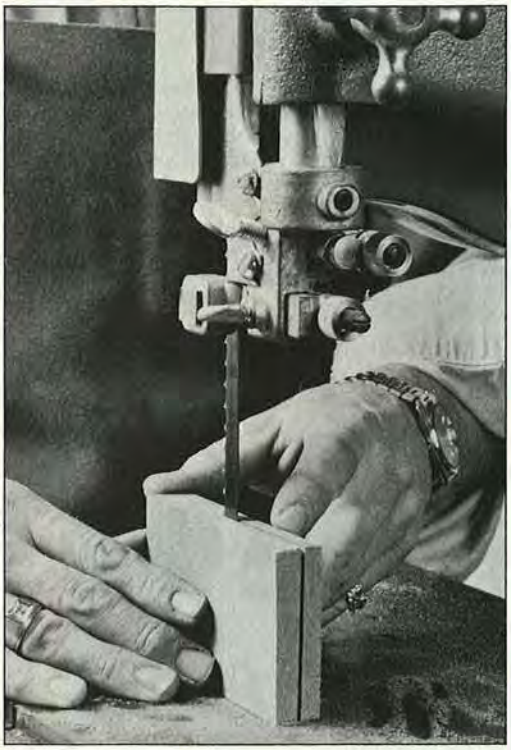
**12** A radial-arm saw is an efficient machine for cross-cutting, ripping, and—if you handle it like this—for injury, too.

**13** Here, you see a thickness planer with the power ON and our woodworker with his thinking

through the tablesaw, and see how two "populars" create problems for some woodworkers.

circuits OFF. Even though you may not have this power tool in your shop, what would you do differently to avoid a trip to the emergency room?

**10** Bandsaws have a nasty bite if you aren't careful.



**14** Let's close with a classic. This woodworker is running a 9" long piece of stock through the jointer. What safety rules is he violating?

Written by Jim Pollock
Illustration: Jim Stevenson
Photographs: Jim Kascoutas

## WHAT'S YOUR SAFETY IQ?

**7** Don't let the smooth look of a sanding belt fool you. Keep your fingers well away. This is no place for a tie, jewelry, or a loose coat.
**8** If you're looking for a place to store tools, scraps, and project pieces, the tablesaw isn't it. Other mistakes: Feeding the stock with the fingers instead of a push stick, and neglecting to use a clamped-down feather board to hold stock.
**9** Without a helper or solid support under the far end of the plywood, this woodworker may lose control of the workpiece. First, rough-cut sheets with a portable circular saw rather than a tablesaw. Clear the area of all obstructions including power cords, wood scraps, and items that may prevent the completion of the cut.
**10** At this moment, our woodworker has two intact thumbs. If he continues, that could change. Use a block to push this piece. Also, lower the blade guard for safety and to keep the blade from wandering off the mark.
**11** Keep your chuck key nearby—but not in the chuck. And next time, clamp the stock securely.
**12** The sight of a hand close to a saw blade should give you a chill. Always use a push stick. And, don't forget to lower the anti-kickback arm and tilt the hood.
**13** Our man is risking his eyes and facial injury by looking inside while the planer is running, and he's risking his hand by reaching into the machine to push the stock through. Stop the machine first before getting anywhere near the cutterheads. And, never raise or lower the table during the cut.
**14** Never, never, never feed any board shorter than 12" long through a jointer. To prevent your hand from contacting the cutters, use a pushblock or pushstick and secure loose clothing.

### Now, score yourself

*28–36 Safety Ace.* You're alert and well-informed. Don't ease up.
*20–27 Stitch in Time.* A careless act could send you to the emergency room. Please study those items that you missed.
*19 or less An Accident Waiting to Happen.* Your next shop project should be a safety session.

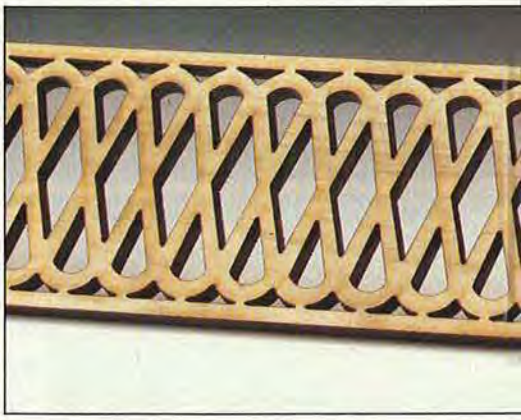
Print this article

Beaming in on woodworking

# THE LURE

**Back in the 1950s, Buck Rogers blasted comic-book foes with his trusty ray gun. Then, it was science fiction. Today, engineers harness the laser ray and put it to work. In fact, the wheels on the woody wagon featured in our October 1989 issue were laser-manufactured.**

**A visit to Laser Machining, Inc. (LMI), a Somerset, Wisconsin, firm that produces laser machines and laser-cuts all sorts of products and materials, opened our eyes to laser technology. We found out that our woody wheels were just the tip of an enormous iceberg.**



**A scanner on this laser engraver reads black-and-white artwork and automatically fires the laser beam. Operator Arlene Smetzki needs only to center the artwork and the wood, then flip a switch.**

## Poof! It's laser woodworking

At LMI, we saw craftsmen operating these once-futuristic machines as comfortably as a router, scrollsaw, or sander. That's because lasers—though costly—aren't highly complicated. Says Bill Lawson, LMI's space-age entrepreneur, "There's nothing that difficult about laser technology, it's only different." (See box, *opposite.*)

In the laser industry, profiling and cutting parts from wood implies one class of machine—the computer-controlled carbon dioxide ($CO_2$) laser. Rated at from 50 to 1,250 watts, these industrial-strength machines can, depending on their wattage, slice through 1" oak, cut delicate wheels and gears (shown *opposite page*), and do any number of other production chores. Most people, though, will never see an industrial-class $CO_2$ laser. That's because these machines—that start at $100,000—end up behind factory walls.

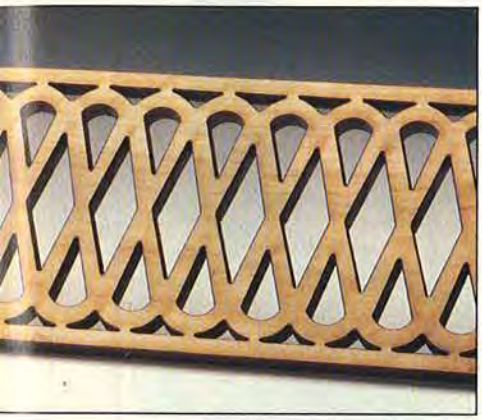
The laser you're more likely to come in contact with falls into a class that LMI refers to as the *laser graver*, shown *above*. As its name implies, this smaller $CO_2$ laser (about 40 watts) does engraving work, such as on plaques, with an optical scanner control rather than computer. As the scanner reads black-and-white artwork, it triggers the laser beam to engrave the artwork or type on wood, ceramics, ivory, leather, and other materials. Engraving lasers can also cut parts from thin wood, but due to their lower power, the job takes longer.

Since engraving lasers cost as little as $40,000 and run on 110-volt household circuitry, small businesses can afford them. There's probably an advertising specialty firm or award-and-trophy manufacturer near you that does laser engraving.

## Laser sense

What can a laser do for you? Design editor Jim Downing discovered that the laser could cut the intricately patterned wheels for our woody wagon from ⅛" Baltic birch at a significant savings over ready-made, spoked wheels. Carl Voss, *WOOD*® magazine's managing editor, inlaid his family's detailed heraldic crest into oak serving trays with the help of a laser. The laser at a local engraving business cut the design through a stack of three layers of veneer and simultaneously scored the oak for the tray surface so he could rout it. Carl paid $10 per tray for the laser work.

# OF THE LASER



*Left:* **In his free time, laser engineer Peter Becher cut, by laser, a different profile on each of the 13 layers of this shadowbox scene.**

*Right:* **Cutting purpleheart, birch, and maple clock gears by laser assures accurate timing.**

*Center:* **Lasers quickly and easily cut intricate designs, as in this decorative fretwork made from birch.**

## Lasers put hot light to work

Lasers cut, drill, engrave, and weld with a light beam eight times the intensity of the sun. Here's how a carbon dioxide ($CO_2$) laser generates its beam:

Under pressure, $CO_2$ mixes with nitrogen and helium in a resonator. Then, a high-voltage discharge passes through the gas, creating energy photons.

Mirrors at the resonator's ends cause the newborn photons to bounce back and forth, amplifying themselves and producing more. In a few microseconds, the photons become a beam of light energy. "It's like capturing the sun through a magnifying glass," comments Jerry Van Houton, LMI's senior engineer.

Both of the preceding problems were solved with a 40-watt, engraving-class laser, the type in service to produce advertising specialties, award plaques, and gifts. Such a laser can enhance wooden items, such as a jewelry or recipe card box, with a burned-in motif; engrave your favorite motto on a sign or plaque; decorate thin veneers with your design; "carve" your favorite scene on a flat surface, or cut out complex designs from thin wood. If the shop has rotary equipment, even round objects, such as a glass, can be laser-decorated.

To locate a laser service near you, check the Yellow Pages under "Trophies." You may have to ask if they feature laser engraving. And, although laser job shops charge about $35 per hour, it takes less than 5 minutes to execute the design shown on the plaque, *opposite page*, qualifying it for a minimum charge of $10.

Keep these tips in mind when considering laser work:

- Lasers read only the black lines in artwork. For sharp reproduction images, make your design lines a dark, solid black.
- Photographs reproduce only when the tones have been transformed to halftone dots, as in a newspaper photo, by a custom-photo processing studio.
- An engraving laser can easily cut about 1/24" deep. Deeper cuts take longer, increasing the chance of charring the wood. But, the laser also can lightly score wood.
- The smallest letter possible with an engraving is about 6-point type, like this: LASER ENGRAVING Anything smaller will become blurred and difficult to read.
- Provide only clear wood for engraving. Knots won't cut.
- If you want plywood engraved, be sure it is void-free.
- Remember, dense woods, such as ebony, take longer to cut. Oily woods may scorch. Wood may be finished or unfinished.

Written by Peter J. Stephano
Photographs: Duane Lage/Crofoot

Print this article

# WOODEN NECKLACE

# AUTUMN DELIGHT

**Prepare to parade the autumn colors this year with this handcrafted necklace. Using our full-sized leaf patterns and your bandsaw or scrollsaw, you're minutes away from a finished project. Necklace designer Marie Fredrickson notes that this is one of her hottest-selling pieces.**

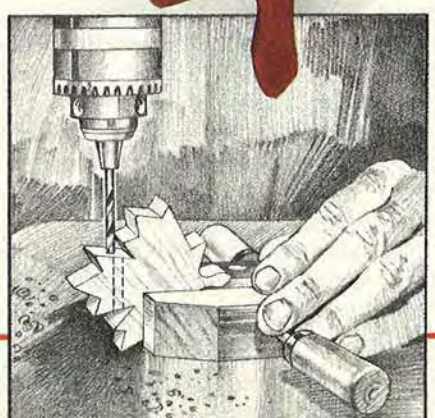
Project Design: Marie Fredrickson
Photograph: Hopkins Associates

**1** Using carbon paper or a photocopy, transfer the leaf patterns (one large and two small as displayed on this page) to ⅜" stock (we planed down ½" birch). If you want to eliminate staining the wood later, use scrap pieces of exotic woods.

**2** With a bandsaw fitted with a ⅛" blade or a scrollsaw, cut the three leaves to shape.

**3** Chuck a ⅛" brad-point bit into your drill-press. Then, one at a time, clamp the leaves in a handscrew clamp, and drill a ⅛" hole through each as shown in the drawing at *right*. Use the lines indicating the hole locations on the full-sized photograph to align each leaf with the drill bit before drilling the holes.

**4** Sand each leaf smooth. (We wrapped sandpaper around a nail file to sand the tight crevices.) Stain, dye, or paint as desired (we mixed oil paints with natural Watco Danish Oil for our stain; you also could stain them with thinned artist's acrylic paints). Let the paint dry, and add a coat or two of clear finish.



**5** Cut a piece of lacing (we used brown rattail cord; narrow satin ribbon also would work) to 34" long. Thread the lacing through the ⅛" hole in the large maple leaf. Now, add an equal number of wooden beads onto the lacing on each side of the large leaf. Add the two smaller leaves, and thread a few more beads next to them. Finally, tie together the lacing at the ends.

***Note:** The lacing and wooden beads (like those used for macramé) are available at most hobby shops and craft supply stores.*

# ROUTER BASICS

## FROM BITS TO BACKING BOARDS

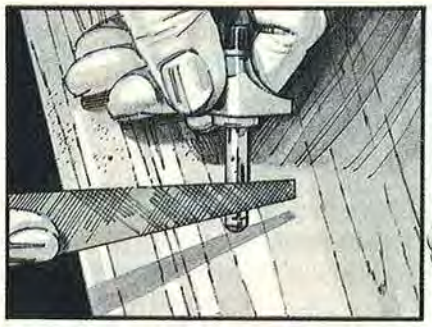
**Woodworkers love their routers, and it's easy to see why. Few tools can be put to more uses, and none rival the router's ability to quickly and gracefully enhance the appearance of a project. For best results when using your router, keep these tips in mind.**

Print this article

Collet locking nut

**1** First, inspect the collet assembly for resin, wood dust, and other debris that can make bit removal difficult. To avoid sticky situations, start by removing the collet locking nut and collet. Then, blow away any loose debris. With a paper clip, gently scrape any gunk that remains as shown *above* (we removed the router subbase for clarity). Soften stubborn resins with lacquer thinner, then wipe clean.

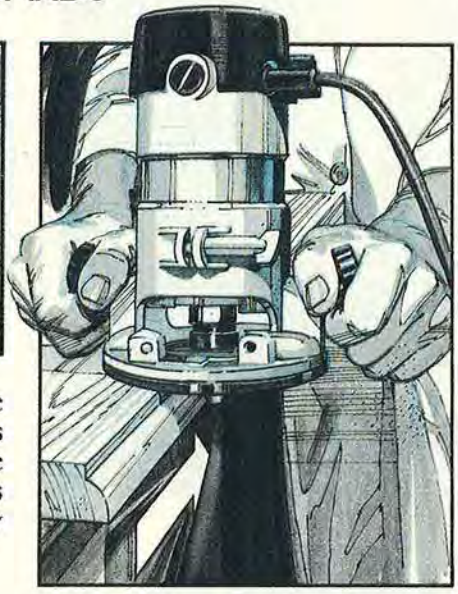
***Note:** Always unplug the router when servicing the collet assembly or changing bits.*



**2** One other culprit can make bit removal a hassle: burrs on the bit shank. Remove them with a few light file strokes as depicted *above*. Now, securely lock the bit in the collet.

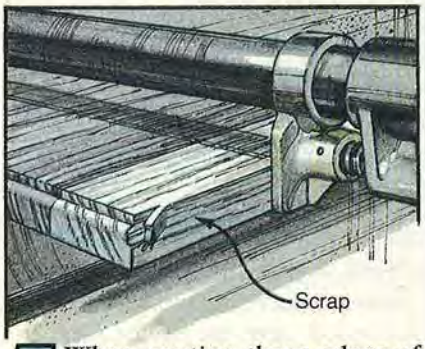
**3** Before starting your router, always keep these safety pointers in mind:

- Wear eye and lung protection.
- Hold the router comfortably at arm's length and make sure you have enough available power cord to complete the job. If you run out of power cord, the bit would spin too long in one place and could burn the workpiece.
- Walk along with the router as you work, being careful not to overreach or lose your balance.



**4** For the best possible cut, move the router along the edges of the surface in a counterclockwise direction as shown *above*. When routing all four edges, cut the end-grain edges first, then cut the edge-grain lengths to minimize edge-grain splinters.

Move the router at a consistent speed, and increase the feed rate if burning occurs. If the grain tears out, take several light passes.




**5** When routing three edges of a surface, such as a shelf, back the final end-grain cut with scrap to prevent splintering of the workpiece. As shown *above*, the bit chipped out the scrap block, but left the corner of the workpiece crisp and clean.

Illustrations: Jim Stevenson

Print this article

**Sample Southwest style with this folk-art carving from Santa Fe's Max Alvarez**

# CARVE A HOWLIN' COYOTE

**One in a collection of regional patterns from the nation's top carvers**

In the New Mexico wilds, you can count on coyotes howling. That's why carver Max Alvarez (see "New Mexico Mountain Menagerie" on page 36) has a passion for this rascal of the sage. "They're survivors, and intelligent," he says.

## Roughing out the body

Max carves large coyotes in cottonwood, but you can choose any carving wood. To make one the size Max usually carves, enlarge the pattern. For a smaller version, use the pattern on this page full-sized. (See the box at *right* for wood sizes.)

After transferring the pattern to your wood, saw out the body and tail. Cut a mortise in the body (the dimensions according to the size of your coyote) where the tail will go. Then, rough out the body, retaining its angles.

Next, rough out the tail. Saw a tenon at its base to fit the body's mortise. Next, finish-carve the tail and sand, but don't glue in place.

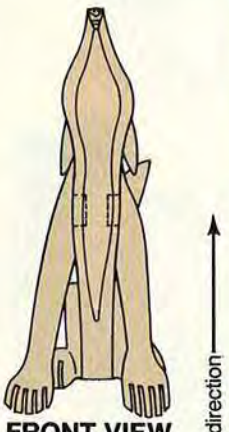
## Getting down to the details

"Cut deep grooves to separate the toes on the coyote's feet," says Max. "And, make shallow squiggles for eyes." On each ear, hollow out an elongated trough. For the nostrils, drill two holes about ⅛" deep with a 1/16" bit. Use a ½" bit to drill a hole ¼" deep for the mouth. "Then, elongate the holes," he adds.

With the details carved, you're ready to sand, but not too smooth. "To leave some texture, I never use finer than 60-grit paper," he says. After sanding the body, glue the tail in place.

## Pick your color, then paint

First, paint on a base coat of white (we recommend acrylic paints). When that dries, apply your chosen overall color, leaving the chest and underside white. After the second coat dries, apply black paint to the nose, mouth, eyes, ear accents, and tail tip. "Highlight the coat with streaks of black, then red, yellow, or other colors you like with a dry brush," Max notes.




**CARVING WOOD SIZES**

Large coyote:
Body: 5½ × 9 × 25"
Front legs: (2) 2½ × 2½ × 13"
Ears: (2) 1 × 1¼ × 4½"
Tail: 4 × 4 × 16½"

Small coyote:
Body: 6 × 2¾ × 1¾"
Tail: 1¾ × 1½ × 3¾"

**SMALL COYOTE**
FULL-SIZED PATTERN
**LARGE COYOTE**
EACH SQUARE = 1"

Photograph: John Hetherington Drawings: Bill Zaun

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Major General, U. S. Marine Corps

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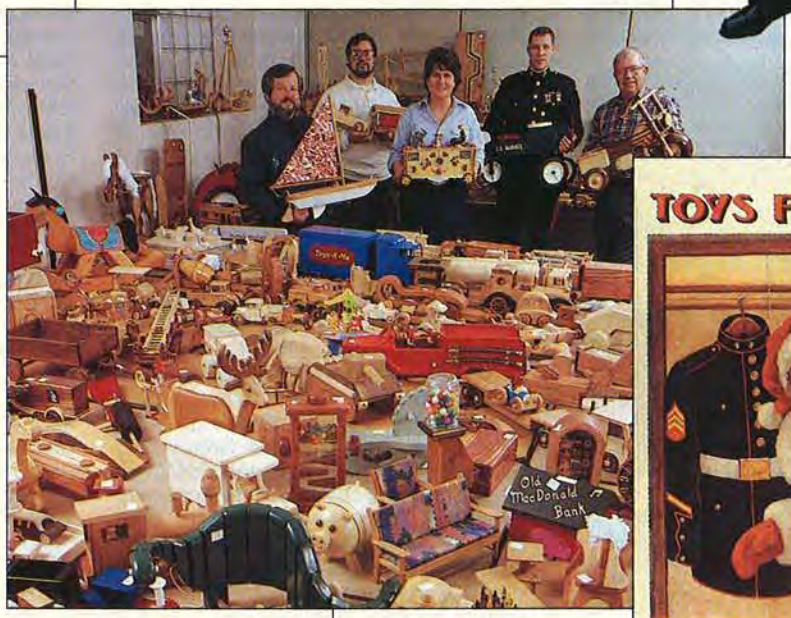


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*Above Top:* Marine with smiling recipients of Toys-For-Tots Program of the U.S. Marine Corps Reserve. *Above Bottom:* 1988 Campaign poster for the Toys-For-Tots Program of the U.S. Marine Corps Reserve.

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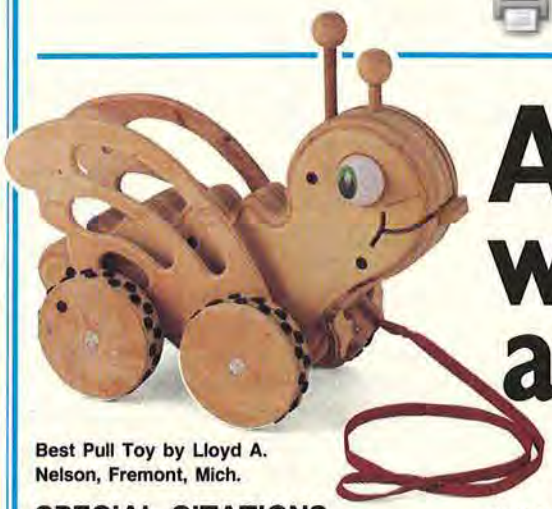

# And the winners are...

Best Pull Toy by Lloyd A. Nelson, Fremont, Mich.

## SPECIAL CITATIONS

**Best Professional Finish** ($1,000 in Minwax merchandise): Mike Jagielo, Almond, Wis., acrobat in tree.
**Best Home-Hobbyist Finish** ($1,000 in Deft merchandise): Jack Rowland, Porterville, Calif., tractor.
**Best Use of Router** ($1,00 in Porter-Cable merchandise): Albert J. McCaffrey, Duluth, Minn., hutch.
**Best Use of Wood** ($1,895 Kity K-5 from Farris Machinery): Sam Roberts, Roseburg, Ore., 3-wheel motorcycle.
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**Best Truck** ($600 Makita Maxi-Shop): Robert W. Sanders, St. Marys, Ga., Mack truck.
**Best Car** ($1,500 in Foley-Belsaw merchandise): U.W. Ponisch, Teslin, Yukon Territory, open car.
**Best Pull Toy** ($1,650 Shopsmith Power Station): Lloyd A. Nelson, Fremont, Mich., bumble bee.

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**Grand Prize** ($1,500 in Black & Decker merchandise): Charles Hardeman, Miami, Fla., tug boat.
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**First Runner-up** ($250 in Grizzly merchandise): Cary McPherson and Wayne Green, Newark, Ohio, helicopter.
**Second Runner-up** ($100 in American Tool Companies merchandise): Rene Spaulding, Newark, Ohio, rocking dinosaur.

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**Grand Prize** ($1,500 in Delta merchandise): Sam Roberts, Roseburg, Ore., 3-wheel motorcycle.
**First Prize** ($500 in Jet): Rich O'Shaughnessy, Wilmington, Del., crane.
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**Second Runner-up** ($100 in Industrial Abrasives merchandise): Mark R. Woodruff, Loveland, Ohio, stealth bomber.

## PROFESSIONAL DIVISION

**Grand Prize** ($1,500 in Freud merchandise): William Bruck, Hamilton, Ohio, recreational vehicle.
**First Prize** ($500 in Bosch merchandise): Neil Seely, Rochester, N.Y., wooden tricycle.
**First Runner-up** ($250 in Dremel merchandise): Greg Curtis, Longwood, Fla., rubberband roadster.
**Second Runner-up** ($100 in Santa Rosa Tools merchandise): Alvin Curtis, Oshkosh, Wis., whale rocker.

## NONWINNERS DRAWING

**$250 in AEG merchandise:** Albert Manning, Maricopa, Ariz.
**$250 1-hp router from Acme Electric:** Stanley Yanoff, Cathedral City, Calif.
**$55 Carving set from American Machine and Tool:** Jame Westerbuhr, Schuyler, Neb.
**$200 hardwood package from Albert Constantine and Son:** Maurice A. Nielsen, Temple, Texas.
**10″ carbide-tipped blade from DML ($87 value):** J.R. Boyd, Danville, Ky.; William E. Koogle, Riviera, Ariz.; Bennie Reck, Louise, Texas; John E. Dunn, Findlay, Ohio; Kevin Schneider, Schuyler, Neb.
**$100 gift certificate from Cherry Tree Toys:** Cynthia House, Arlington Heights, Ill.; Martin Hochhalter, Ashley, N.D.; T. J. Lagonegro, Elmira, N.Y.; Martin Badinelli, Smithville,

Best Use of Router by Albert J. McCaffrey

N.J.; Joe Molacck, Schuyler, Neb.

**$20 stain kit from Fabulon Gel-Eze Stains:** Roger Coddington, Traverse City, Mich.; V. D. Vandlen, Battle Creek, Mich.; Richard Williams, Winslow, Maine; Dwain Whitson, Bardstown, Ky.; George A. Hackett, Shellsburg, Iowa; Russ Allen, Palatine, Ill.; Patia Crump, Hazelhurst, Ga.; John W. Clavier, Villa Rica, Ga.; Robert Stevens, East Hartford, Conn.; David L. Sullivan, Hemet, Calif.; Warren H. Atkins, San Mateo, Calif.; Mack Hoffman, San Clemente, Calif.; Mark Kramer, Green Lake, Wis.; Larry J. Weaver, Petersburg, W.Va.; Michael Kinser, Norton, Va.; Anthony Mitchell, Norton, Va.; Jason Scott, Norton, Va.; Preston Jackson, Norton, Va.; Roland Cochrane, Norton, Va.; Dwayne Smith, Norton, Va.; Paul Edmondson, Odessa, Texas; Bill Rohde, Memphis, Tenn.; Stuart L. Woldman, Shaker Heights, Ohio; Dallas Johnson, Wahpeton, N.D.; Chris Johnston, Fargo, N.D.; Robert Guest, Albuquerque, N.M. Alex W. Flinsch, Garfield, N.J.; Myron Spindler, Hope, Minn.; Robert H. Mitchell, Brooklyn Center, Minn.; Orvel Treangen, Spring Grove, Minn.

Best Truck by Robert W. Sanders, St. Marys, Ga.

**$75 Ripstrate from Fisher-Hill:** Michael Davis, Rome, Ga.; John C. Monaghan, Goleta, Calif.; Jerome P. Kobishop, Stevens Point, Wis.

**$10 Titebond gluing kit from Franklin International:** Brian Anderson, Waseca, Minn.; George A. Miller, Barryton, Mich.; Joseph Winter, Livonia, Mich.; Edward Lusk, Muncie, Ind.; Terry N. Kaeb, Buckley, Ill.; James M. Kirby, Daytona Beach, Fla.; Herf Graham, Rhome, Texas; Robert C. Montz, Brunswick, Ohio; J. D. Shea, Manchester, N.H.; Joseph Pasquito, Lawrenceville, N.J.

**$100 book club membership from How-To Book Club:** Ted M. Przybocki, Birmingham, Mich.; Donald Rieth, Gloversville, N.Y.; Frank W. Howard, Benton Harbor, Mich.; Tom Witherow, Remer, Minn.; Harry Billings, Mission Viejo, Calif.

**$99 portable belt sander from Lobo:** John C. Schneider, Romeo, Mich.; Charles Ferre, Rockford, Ill.; Donald E. Begley, Lexington, Ky.; Joe Christoff, Wichita, Kan.; S. B. Shear, Sharon, Mass.

**$126 8-piece router-bit set from MLCS:** L. M. Beeman, Kingsley, Pa.

**$25 gift certificate from Meisel Hardware:** J. R. Christman, Pittsford, N.Y.; Jeff Horn, Schuyler, Neb.; Wayne H. Traffas, Wyomissing, Pa.; Gregory Burns, West Hartford, Conn.; Kevin Hutchinson, Amesbury, Mass.; Howard Nellist, Elkhart, Ind.; Dallas Howard, Wichita, Kan.; Glenn Thompson, Wasilla, Ark.; Normand F. Bergeron, Lowell, Mass.; Richard Ehlert, Vesper, Wis.

**$348 4" belt sander from Milwaukee Electric:** Richard Kern, Norton, Va.

**$26 branding iron from Nova Tools:** Stephen Forman, E. Amherst, N.Y.

**$80 Carbide-tipped saw blade from Olson Saw:** Anne House, Arlington Heights, Ill.; R. C. Darbyshire, Quail Valley, Calif.

**$130 Super 15 scrollsaw from Penn State:** Harold Geiselman, Canton, Ohio.

**$550 14" scrollsaw from RB Industries:** Ralph L. Kohler, Blossvale, N.Y.

**$75 *Build It Better Yourself* woodworking book from Rodale Books:** Bob Stevens, Naples, Fla.

**$250 plunge router and accessories from Skil:** Susan, Lewis University Training Program, Dwight, Ill.

**$100 Formby gift set from Thompson-Formby:** Nathan Foltz/Scott Muto, Newark, Ohio; Robert Stafford, Pontiac, Mich.; Warren J. Kaeb, Buckley, Ill.; Matthew Hardeman, Miami, Fla.; Loretta Knepprath, Port Washington, Wis.

**$29 handyman utility pack from Vaughn & Bushnell:** Jamison S. Honeycutt, Norton, Va.; Chris Draughn, Norton, Va.; Chris D. Ayers, Norton, Va.; George J. Wagner, Ringle, Wis.; Tom Hock, Westminster, Md.; Ralph D. Cope, Hartford, Conn.; Gordon McCaughan, Snohomish, Wash.; E. W. Chapman, Montville, Ohio; Richard C. Newlon, Kilmarnock, Va.; James Hylton, Norton, Va.

**$399 Bridgewood model BW12P 12" planer from Wilke Machinery:** Harold Tiller, Broken Arrow, Okla.

**$250 Black & Decker cordless jigsaw from Williams Tools:** Gerald MacFarlane, East Dubuque, Ill.

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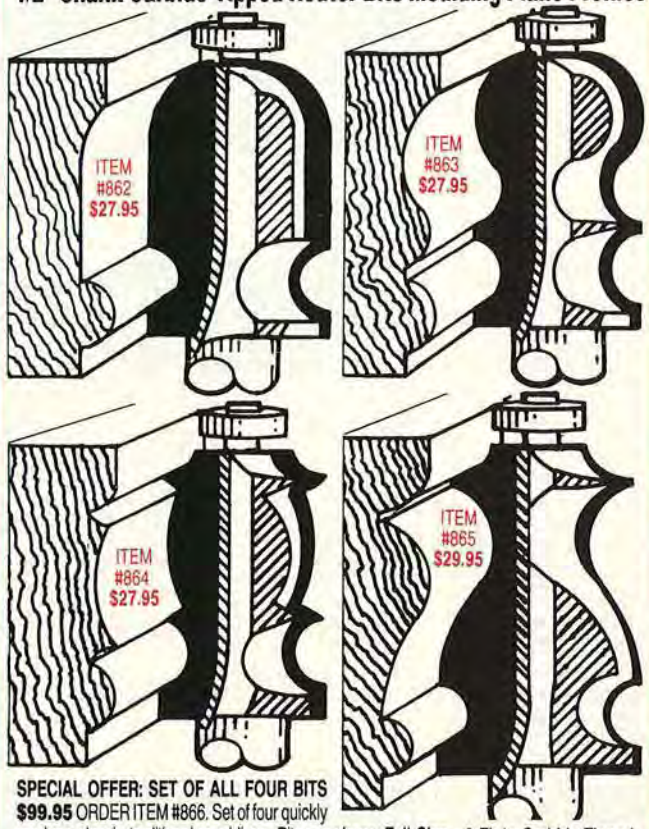


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# ASK WOOD

Print this article

**Whether your woodworker's license reads "Beginner," "Intermediate," or "Advanced," you're bound to have a few questions about your favorite hobby. We can help by consulting our staff and outside woodworking experts. Send your questions to:**

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*We'll answer all questions, but due to the volume of mail, we can't publish every letter. We may edit letters selected for publication.*

## No, you can't do that!

I have access to large sanding belts from the local plywood mill that have some use left in them. I want to cut them in strips to make belts for my 3×24" portable sander, and want to know the best way to glue or tape the two ends. I would appreciate your recommendations.

***—Bob Moldenhauer, Roseburg, Ore.***

*Bob, we ran your idea by Win Wilson at Adirondack Adhesives in Albany, New York. According to Win, you must scarf the ends to avoid a bump every time the joint passes over the base of the sander. Also, you need a 25-ton heated press to properly seal the joint. Without a press and the ability to scarf, this operation is beyond the reach of home woodworkers. Win added the caution that homemade belts have a reputation for delaminating and flying off the sander—a risk no one should take.*

## Wood conditioner helps even out stains

I constructed a birch end table to which I would like to apply deep red mahogany and then spray on lacquer. My hardwood lumber shop has told me that birch, like hard maple, stains poorly. I noted a *WOOD* magazine article in the October 1987 issue that suggests applying a coat of shellac on pine to reduce the absorption of stain. Since I wish to finish with lacquer, I have doubts that this method would be successful. Could you offer a solution?

***—Rober W. Fues, Chicago***

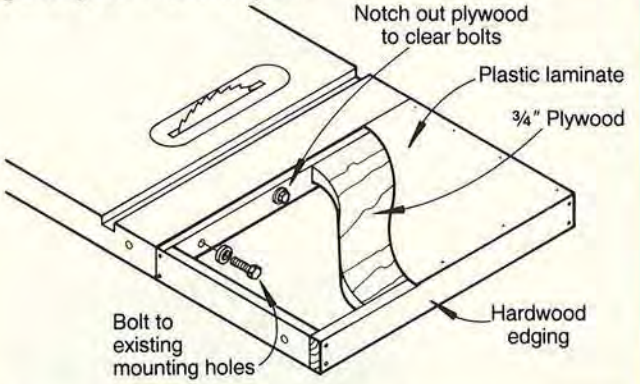
*Jim Boelling,* WOOD *magazine's project builder, suggests you apply Minwax Wood Conditioner to your sanded project—it works great on soft woods, such as pine, and light-colored hardwoods such as birch and maple. Here's one more solution some woodworkers have found successful: Spray on a light coat of stain. Then when that dries, brush on additional stain.*

## Save your fingers by making your own table extension

Recently, I acquired a Powermatic Artisan tablesaw. The open-grid extensions on this and many other tablesaws are finger busters, as far as I am concerned. How can I fill the grid openings?

***—Richard Pinette, San Antonio, Texas***

*We suggest you remove the grate-type extensions and use them as patterns to build your own extensions from 1⅛" birch or maple and ¾" particleboard or plywood as shown* below. *Apply plastic laminate to the top and bottom of the particleboard (the bottom layer helps prevent warping). Then, you'll never again worry about trapping your fingers in the open extensions. You may even want to lengthen the shop-made extensions to expand your work surface.*



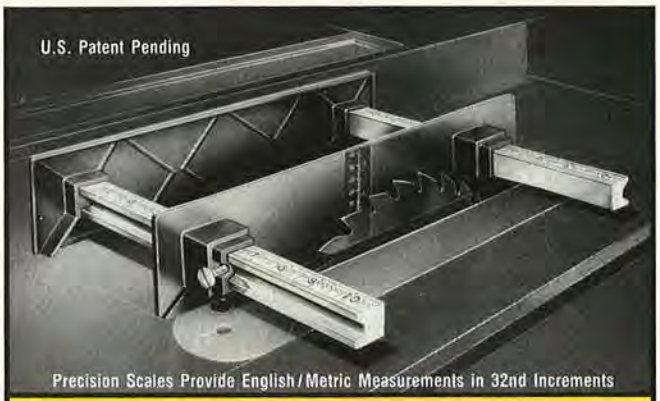

## Wood collectors cover the globe

As a regular reader of *WOOD* magazine, I find it most informative, even though it is written for the American market. Along with my interest in woodworking, I also collect specimens of timber.

Recently, I heard that in America there are groups of enthusiasts who collect wood samples and the related data in much the same way as stamp collectors. Would it be possible for you to pass on to me any information, including names and addresses, of this hobby? A little international exchange would add a dimension to my interest.

***—Barry Poole, Victoria, Australia***

*Barry, old mate, this is going to open up a whole new world to you. The group you refer to is the International Wood Collector's Society. It boasts hundreds of members, many outside the U.S. In fact, a peek in their current membership directory shows 35 of your countrymen listed. You'll discover that they are a great bunch and that they publish a nifty magazine about the hobby. For membership information, write: Robert M. Bartlett, Secretary-Treasurer, International Wood Collector's Society, 2913 Third St., Trenton, MI 48183.*

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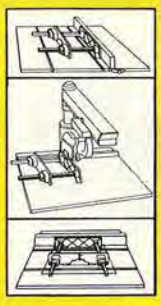

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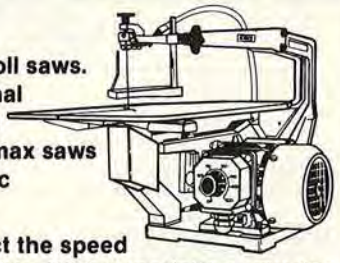

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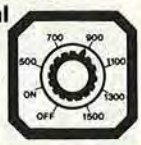


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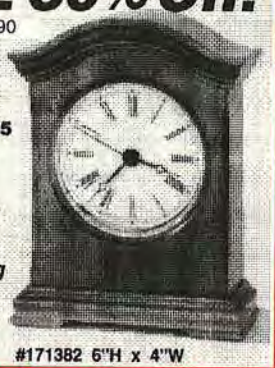

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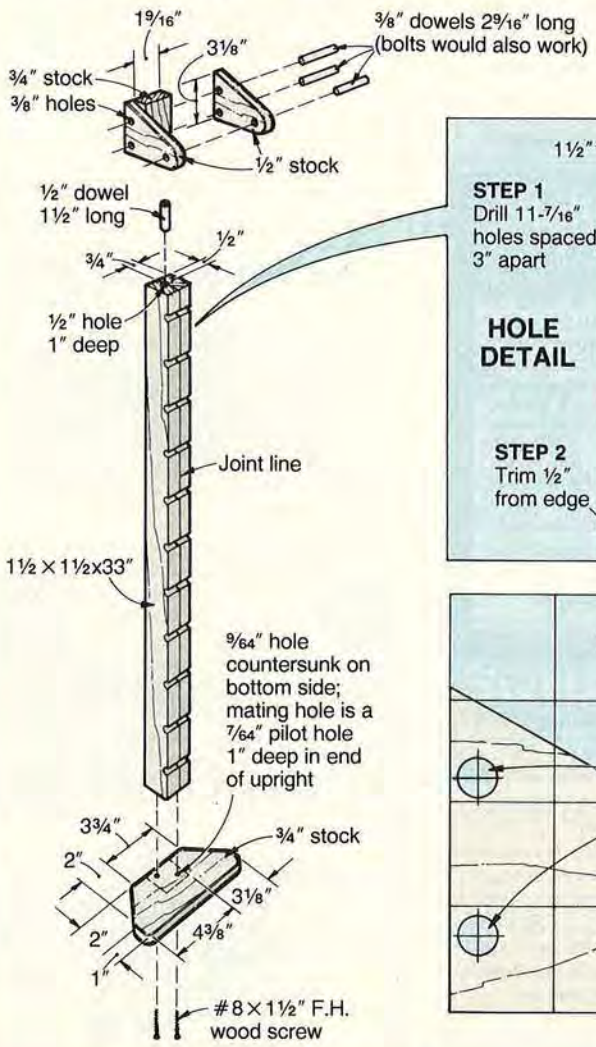


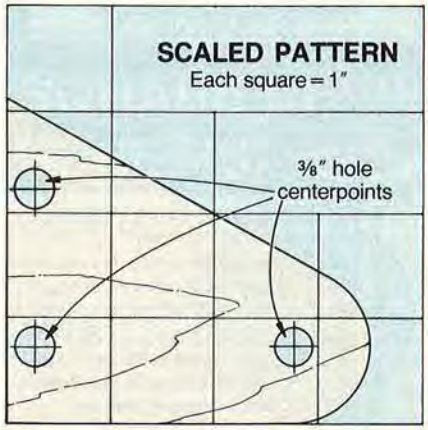

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Print this article

The first hammer was a rock tied to a stick. As man progressed into the Bronze and Iron ages, hammers forged other tools and became essential tools of change.

By the time of Christ, the hammer evolved to a shape familiar today. Some even had claws for pulling nails.

**Voight's double-claw hammer was one of 400 hammers patented in the U.S. between 1840 and 1910.**

Until the middle of the 19th century, blacksmiths crafted hammers as one-of-a-kind tools and hand-forged hammers display an imperfect surface. Also, many old hammers feature the once-common strap method of head attachment. Craftsmen made these *strap hammers* by forge-welding a pair of steel straps to the hammer head, then riveting the straps through the wooden handle.

### Americans hammer out the unusual

From the 1840s to the first years of the 20th century, U.S. inventors patented approximately 400 hammer designs. The majority failed to excite the public and now prove quite collectible curiosities.

One of the earliest patents for an American hammer was that of Solomon Anderson of South Berlin, New York. His 1845 carpenter's hammer had claws that curled around the handle.

In 1902, George Voight of San Francisco patented perhaps the most unusual and interesting hammer. Manufactured by the Double Claw Hammer Company of Brooklyn, New York, Voight's hammer head featured two-piece construction and a second curved claw under the normal claw to speed nail-pulling (see photo *above*).

### Collecting heads and handles

The value of handmade hammers depends on their approximate age, quality of workmanship, condition, and a blacksmith's touchmark on the head. A simple strap hammer brings $50 and up.

Uniqueness adds value, too. Double-claw hammers sell for $100 to $300; a Solomon hammer more than $100. Early hammers made by Cheney, Winchester, Keen Kutter, and Stanley range from $25 to $100.

Written with Phillip J. Whitby
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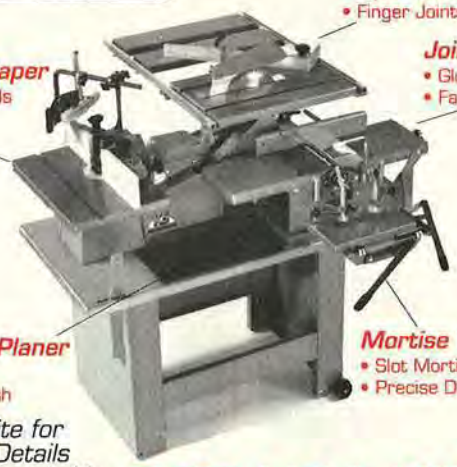

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# TOOL-INDUSTRY INSIDER

## Delta sees turning as woodworking's next hot spot

Print this article

During the 1980s, executives at Delta watched Taiwanese manufacturers change the face of the woodworking market by shipping low-cost stationary equipment to the United States. As each wave of machines hit U.S. shores, interest in those products—and woodworking in general—grew in leaps and bounds. Ironically, many Taiwanese engineers based their designs on Delta machines.

We ran across Mark Strahler, Delta's director of marketing, at the 1990 National Home Center Show in Chicago, and he described the situation this way: "First it was drill presses. Everybody was bringing Taiwanese drill presses into this country. Then, they brought in copies of the Delta 31-205 tablesaw at lowball prices. By the mid-'80s, scrollsaws in a great array of prices and qualities were available to the public. Suddenly, scrollsaws were going crazy."

(Note: Delta now imports low-priced tools from Taiwan, too.)

Today, Delta officials feel that scrollsaw demand has peaked. What's next? Strahler thinks lathes will be a hot ticket, and naturally, Delta wants to lead the charge.

How did the people at Delta arrive at their conclusion? "We took a look at two hot products—benchtop tablesaws and scrollsaws—and realized that here were products that help the woodworker complete projects with just one major tool," Strahler told us. "So, when we looked for another tool that allows you to do a project from start to finish, a lathe was the obvious answer. That, combined with the popularity of turning in other countries such as England and Australia, makes us feel that turning could explode in popularity in this country."

Understandably, Strahler didn't want to make public the specifics of Delta's marketing plan to boost turning. But, he assured us that Delta will be encouraging more people to try turning through a variety of promotions. "A lot of people think that turning is difficult," Strahler said. "We'd like to dispel that myth."

To back up its promotions with products, Delta has joined forces with Robert Sorby of England to provide a line of Delta/Sorby turning tools in the U.S. And, Strahler told us his company will introduce a lathe priced under $500 with plenty of higher-priced lathe features no later than March, 1991. Today, Delta lathes sell between $1,000 and $2,500.

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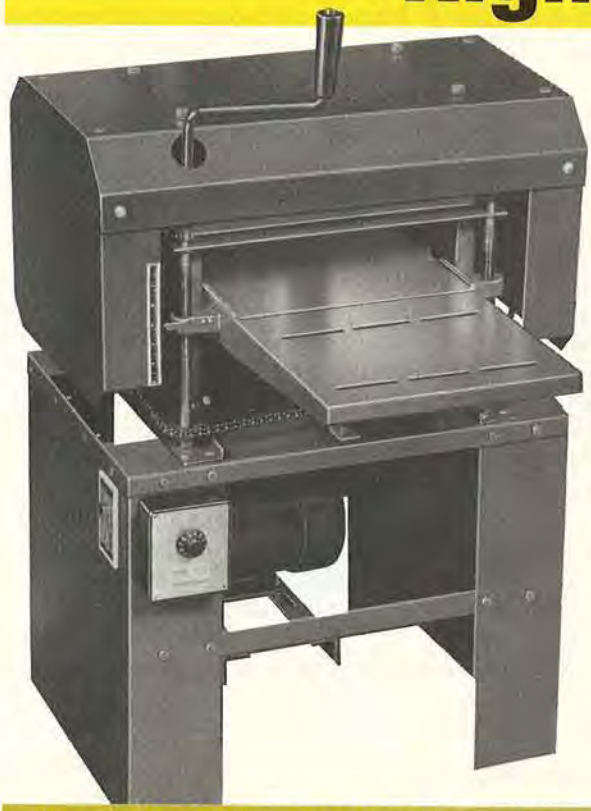

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## WOOD ANECDOTE

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# SABICU

## The master of masquerade

**Makers of classic colonial furniture relied on mahogany and sabicu.**

Colonial-era cabinetmakers may have been equally skillful at horse-trading and craftsmanship. In light of recent research, it seems that they frequently substituted a mahogany look-alike for the real thing in some of their now classic and collectible Queen Anne and Chippendale furniture.

Experts at the Francis du Pont Winterthur Museum in Winterthur, Delaware, have only recently discovered that the primary wood of a few pieces in their valuable furniture collection happens not to be mahogany, but a species named sabicu (*Lysiloma latisiliqua*), native to the West Indies. Late 18th-century American cabinetmakers called the wood "horseflesh" due to its distinctively curly figure. Because sabicu resembles true mahogany in color, they inventoried it and combined it with other wood species in building popular pieces of the time—particularly high chests of drawers and tables. In some instances, true mahogany, which behaves better under a knife or gouge, was used for carved legs and finials on a sabicu piece.

Doubt lingers as to whether or not any actual misrepresentation was intended. Since sabicu came from the same area as mahogany and appeared identical, the furnituremakers could simply have thought the two the same. Yet, mahogany was well-known, and if sabicu could pass for mahogany, who would know or care? Whatever the verdict, sabicu went undetected for more than 200 years, making it the master of masquerade.

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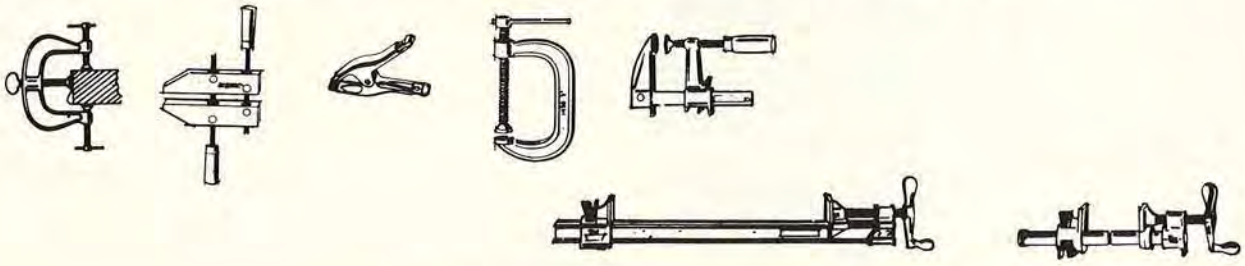

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| 1676-1 | H.D. Hole Hawg w/cs | 429 | 235 |
| 6511 | 2 sp SawZall w/case | 224 | 129 |
| 6750-1 | Drywall gun 0-4000 4.5A | 154 | 95 |
| 6507 | TSC SawZall w/case | 239 | 129 |
| 6170 | 14" chop saw | 430 | 259 |
| 6014 | Orb.sand 4.5" x 9.25" | 209 | 122 |
| 8977 | Var. temp heat gun | 114 | 75 |
| 5397-1 | 3/8" v/sp ham. drill kit | 232 | 137 |
| 5371-1 | 1/2" v/sp ham. drill kit | 335 | 185 |
| 3107-1 | 1/2" v/sp rt angle drill kit | 340 | 195 |
| 6754-1 | Drywall gun 0-4000 4.5A | 179 | 119 |
| 0230-1 | 3/8" drill 0-1700 rpm | 189 | 107 |
| 3300-1 | 1/2"v/sp mag rt angle kt | 309 | 179 |
| 5660 | Router 1-1/2 H.P.-10A | 325 | 195 |
| 5680 | Router 2 H.P.-12A | 355 | 225 |
| 5455 | 7/8" polisher 1750rpm | 219 | 129 |
| 6215 | 16" chain saw | 280 | 169 |
| 6365 | 7-1/4" circular saw | 204 | 114 |
| 6366 | 7-1/4"circ.saw w/fnc&bld | 214 | 119 |
| 6368 | 7-1/4"circ.saw w/fence blade & case | 239 | 129 |
| 0216-1 | 2 sp cdls drill Hi-torque | 245 | 139 |
| 0235-1 | 1/2"drill kyls. chuck mag | 215 | 125 |
| 6016 | 1/4 sheet pad sander | 84 | 49 |
| 6145 | 4.5" grinder 10,000 rpm | 159 | 99 |
| 6142 | 6145 w/cse & access | 197 | 125 |
| 6749-1 | Drywall gun 0-2500 4.5A | 189 | 125 |
| 6377 | 7-1/4" worm drive saw | 295 | 169 |

## FREUD SAW BLADES
### 5/8" Bore - Industrial Grade
### CARBIDE TIPPED SAW BLADES

| Item No. | Description | Teeth | List | Sale |
|---|---|---|---|---|
| LU72M010 | Gen Pur. -A.T.B. | 10° 40 | 58 | 38 |
| LU82M010 | Cut-off | 10" 60 | 77 | 44 |
| LU84M011 | Comb. | 10" 50 | 65 | 40 |
| LU85M010 | Super Cut-off | 10" 80 | 96 | 55 |
| LM72M010 | Ripping | 10" 24 | 57 | 37 |
| LU73M010 | Cut off | 10" 60 | 70 | 44 |
| LU87M010 | Thin kerf | 10" 24 | 60 | 38 |
| LU88M010 | Thin kerf | 10" 60 | 74 | 44 |
| LU98M010 | Ultimate | 10" 80 | 107 | 69 |
| SD306 | 6" Dado - Carbide | | 184 | 105 |
| SD308 | 8" Dado - Carbide | | 196 | 109 |
| F0 | 1-3/4"X5/8"Bisc.1000 Qty. | | 32 | 27 |
| F10 | 2-1/8"X3/4"Bisc.1000 Qty. | | 32 | 27 |
| F20 | 2-3/8"X1"Bisc.1000 Qty. | | 34 | 29 |
| FA | Assor. Biscuits 1000 Qty. | | 34 | 29 |
| WC106 | 6 pc.chisel set w/cs | 1/4"-1" | 73 | 52 |
| WC110 | 10 pc.chisel set w/cse | | 119 | 79 |
| FB100 | 16 pc. forstner bit set | | 284 | 155 |
| FB107 | 7 pc. forstner bit set | 1/4"-1" | 82 | 49 |
| 94-100 | 5 pc router bit door system | | 286 | 155 |
| JS100 | Biscuit Jointer w/case | | 300 | 159 |
| CE82 | Planer w/case carb blds | | 218 | 135 |
| FT2000 | 3-1/4 H.P. plunge router | | 299 | 185 |

## THE NEW "TK" BLADE SERIES

| Item | Description | Teeth | List | Sale |
|---|---|---|---|---|
| TK203 | 7 1/4" Framing | 24 | 29 | 17.35 |
| TK206 | 10" Framing | 24 | 33 | 19.80 |
| TK303 | 7 1/4" Finishing | 40 | 36 | 21.60 |
| TK306 | 10" Finishing | 40 | 40 | 23.95 |
| TK903 | 7 1/4" Combo | 30 | 31 | 18.60 |
| TK906 | 10" Combo | 50 | 45 | 26.95 |

## MAKITA CORDLESS

| Model | | List | Sale |
|---|---|---|---|
| 6070DW | 3/8" v/sp rev. drill, 7.2v | 130 | 78 |
| 6071DW | 3/8" v/sp rev. drill w/removable batt, 7.2v | 199 | 115 |
| 5090DW | 3-3/8" saw kit, 9.6v | 256 | 139 |
| 6010DWK | 3/8" cdls drill kit, 7.2v | 164 | 95 |
| 6010SDW | 3/8" cdls drill, 7.2v | 99 | 65 |
| DA3000DW | 3/8" angle drill, 7.2v | 251 | 139 |
| 8400DW | Hammer drill kit, 9.6v | 272 | 149 |
| 4390DW | 9.6v cdls. recip saw kit | 230 | 128 |
| 4300DW | Jig saw kit comp., 9.6v | 232 | 129 |
| 6012HDW | 2 spd. driver drill w/clutch & cse 9.6v | 236 | 122 |
| 6092DW | V/sp drill, kit comp | 250 | 127 |
| 6093DW | V/sp drill w/clutch-comp. | 261 | 129 |
| 6891DW | Drywall gun 0-1400 9.6v | 237 | 135 |
| 632007-4 | 9.6 volt battery | 48 | 30 |
| 632002-4 | 7.2 volt battery | 40 | 28 |
| 5007NBA | 7-1/4" saw w/elec. brake | 233 | 129 |
| 5008NBA | 8-1/4" saw w/elec. brake | 284 | 158 |
| BO4510 | 1/4 sheet pad sander | 85 | 54 |
| 9900B | 3"x21" belt sander w/bag | 268 | 148 |
| 9924DB | 3"x24" belt sander w/bag | 282 | 149 |
| 9045N | 1/2 sht fin. sand. w/bag | 231 | 129 |
| 4200N | 4-3/8" circ. saw 7.5A | 225 | 127 |
| 4301BV | Orb. v/sp jig saw 3.5A | 289 | 155 |
| JR3000V | Vs. recip saw w/cse | 227 | 129 |
| LS1020 | New 10" miter saw | 463 | 245 |
| 9820-2 | Blade sharpener | 373 | 195 |
| 1900BW | 3-3/4" planer w/cse | 209 | 115 |
| 1911B | 4-3/8" planer 7.5A | 240 | 139 |
| 1100 | 3-1/4" planer w/case | 401 | 219 |
| 9207SPC | 7" sander-polisher | 276 | 155 |
| 3601B | 1-3/8 H.P. router | 255 | 139 |
| 3700B | 1/2 H.P. trimmer | 190 | 109 |
| 9501BZ | 4" grinder, 3.5 amp | 126 | 75 |
| BO4530 | 6" round sander | 101 | 59 |
| BO4550 | 1/4 sht pad sand w/bag | 86 | 55 |
| DA3000R | 3/8" angle drill | 270 | 148 |
| 6302 | 3/8" v/sp 5.2Amp drill | 209 | 105 |
| HP2010N | 3/4" v/sp hmr. drill w/cs | 300 | 165 |
| 2708W | 8-1/4" table saw | 504 | 259 |
| 2711 | 10" table saw w/brake | 841 | 489 |
| 2030N | 12" planer/jointer | 3120 | 1699 |
| 2040 | 15-5/8" planer | 2595 | 1399 |
| 1805B | 6-1/8" planer kit /case | 679 | 359 |
| 5005BA | 5-1/2" circular saw | 223 | 135 |
| 6404 | 3/8" drill 0-2100 rpm 2A | 104 | 65 |
| 6510LVR | 3/8"drill rev. 0-1050 rpm | 145 | 79 |
| 6013BR | 1/2" drill rev. 6Amp | 241 | 139 |
| 5402A | 16" circular saw-12Amp | 636 | 349 |
| 3612BR | 3 H.P. plunge router | 377 | 189 |
| 9401 | 4"x24"belt sander w/bg | 318 | 175 |
| 3620 | 1-1/4 H.P.plunge router | 192 | 109 |
| 4302C | V sped. orb. jig saw | 302 | 159 |
| 5077B | 7-1/4" Hypoid saw | 252 | 145 |
| LS1440 | 14" Miter saw | 721 | 439 |
| 2414 | 14"cut-off saw AC/DC | 351 | 199 |
| 5007NB | 7-1/4" circ saw 13A | 209 | 114 |
| 3612B | 3 HP plunge rout sq/bs | 377 | 189 |

## SENCO AIR NAILERS

| Model | | List | Sale |
|---|---|---|---|
| SFN1 | Finishing nailer 1"-2" | 377 | 269 |
| SFN2 | Fin. nailer 1.5"-2.5" | 571 | 395 |
| SN325 | Nailer 1-7/8"-3-1/4" | 665 | 445 |
| SN4 | Gen'l purpose 2"-3-1/2" | 685 | 469 |
| LS2 | Pinner 5/8"-1" | 351 | 249 |
| SKS | Stapler 5/8"-1-1/2" | 351 | 249 |
| LS5 | Pinner 1"-1-1/2" | 399 | 285 |

## BOSTITCH AIR NAILERS

| Model | | List | Sale |
|---|---|---|---|
| N80C-1 | Utility coil nailer | 795 | 399 |
| N80S-1 | Stick nailer | 795 | 399 |
| T36-50 | Sheath & decking stapler | 595 | 334 |
| N12B-1 | Coil roofing nailer | 795 | 399 |
| N60FN-2 | Finishing nailer | 625 | 335 |
| T31 | Brad nailer | 245 | 149 |
| CWC100 | 1 HP Pancake Comp. | 445 | 295 |

## SKIL SIZZLERS

| Model | | List | Sale |
|---|---|---|---|
| 6850-02 | NEW1/2" EMH hammer drill w/case 4 amp | 255 | 129 |
| 5510 | (551)5-1/2" circ saw | 112 | 105 |
| 5525 | (552)6-1/2" circ saw | 175 | 129 |
| 5656 | (553)7-1/4" circ saw | 132 | 125 |
| 5790 | (810)10-1/4" circ - dr ft | 400 | 269 |
| 5825 | (367)6-1/2" worm saw | 229 | 155 |
| 5865 | (825)8-1/4" worm saw | 250 | 164 |
| 3810 | 10" Miter saw | 263 | 225 |
| 3810S | 3810 w/60 tooth carb bld. | | 239 |
| 77 | 7-1/4" worm drive saw | 230 | 145 |
| 5350 | 2-1/3 HP circ. saw | 82 | 75 |
| 5250 | 2-1/4 HP circ. saw | 69 | 64 |
| 2735-04 | 12v w/spd cordless drill complete w/cse. & 2 batt. | 210 | 144 |

## LEIGH DOVETAIL JIGS

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D1258R-24-List 399.00-Sale 295.00
LEIGH INSTRUCTIONAL VIDEO-SALE 29.00!!

| | | | |
|---|---|---|---|
| MMT | 12" multiple mort. & tenon attachment for D1258-12 | 269 | 219 |
| MMT | 24" multiple mort. & tenon attachment for D1258-24 | 299 | 239 |

## HITACHI TOOLS

| Model | | List | Sale |
|---|---|---|---|
| TR8 | Plunge router, 1-1/2 H.P. | 219 | 119 |
| M12V | NEW 3H.P. v/sp router | 437 | 249 |
| TR12 | Plunge router, 3 H.P. | 354 | 178 |
| C10FA | 10" dlxe. mitre saw | 490 | 275 |
| C12FA | NEW12" mitre saw | 586 | 339 |
| C8FB | 8-1/2" slide cmpd saw | 859 | 469 |
| FREUD LU91M008 | 8.5"c/bld 48 tooth | 58 | 49 |
| C15FB | 15" miter saw | 745 | 385 |
| FREUD LU85M015 | 15"c/bld 108 tooth | 181 | 115 |


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## PIRANHA By Black & Decker CARBIDE TOOTH SAW BLADE

| Model # | Dia. | #Teeth | List | Sale |
|---|---|---|---|---|
| 73-716 | 6-1/2 | 18 | 13.70 | 7.35 |
| 73-717 | 7-1/4 | 18 | 13.90 | 7.99 |
| 73-737 | 7-1/4 | 24 | 17.20 | 9.29 |
| 73-757 | 7-1/4 | 40 | 31.30 | 16.79 |
| 73-759 | 8-1/4 | 40 | 44.65 | 24.99 |
| 73-719 | 8-1/4 | 22 | 19.65 | 11.95 |
| 73-715 | 5-1/2 | 16 | 13.70 | 7.99 |
| 73-740 | 10 | 32 | 33.20 | 15.95 |
| 73-770 | 10 | 60 | 61.46 | 29.95 |
| 73-711 | 10 | 50 | 65.08 | 29.95 |

## PANASONIC CORDLESS

| Model | | List | Sale |
|---|---|---|---|
| EY6205B | NEW v/spd. 12 volt drill w/15 minute charger | 390 | 219 |
| EY6200B | NEW 2 spd. 12 volt drill d-hdle w/15 minute charger | 350 | 195 |
| EY6281B | NEW v/spd. 9.6 volt drill w/15 minute charger | 350 | 189 |
| EY571B | V/spd. 9.6 volt drill | 239 | 135 |

## JORGENSEN STEEL I-BAR CLAMPS

| Model | Size | List | Sale |
|---|---|---|---|
| 7224 | 24" | 27.11 | 17.55 |
| 7236 | 36" | 29.10 | 18.65 |
| 7248 | 48" | 31.96 | 19.75 |
| 7260 | 60" | 35.60 | 23.55 |
| 7272 | 72" | 37.30 | 25.29 |

## ADJUSTABLE HANDSCREWS BY JORGENSEN

| Item# | Jaw Length | Open Cap | List | Sale | Box of 6 |
|---|---|---|---|---|---|
| #3/0 | 6" | 3" | 15.57 | 8.89 | 49.98 |
| #2/0 | 7" | 3-1/2" | 16.74 | 9.95 | 53.55 |
| #0 | 8" | 4-1/2" | 18.63 | 11.95 | 62.95 |
| #1 | 10" | 6" | 21.30 | 12.99 | 71.49 |
| #2 | 12" | 8-1/2" | 24.45 | 15.95 | 81.89 |
| #3 | 14" | 10" | 31.01 | 18.95 | 104.95 |
| #4 | 16" | 12" | 40.30 | 24.89 | 146.85 |

## STYLE "J" ADJUSTABLE HANDSCREW KITS

| Model | Jaw Length | List | Sale | Lots of 6 |
|---|---|---|---|---|
| J06 | 6" | 8.50 | 5.49 | 31.29 |
| J08 | 8" | 9.50 | 6.09 | 34.69 |
| J10 | 10" | 11.10 | 8.89 | 50.55 |
| J12 | 12" | 13.79 | 9.99 | 54.95 |

## STYLE 37 2-1/2" Throat 1/4"x3/4" JORGENSEN

| Item# | Jaw Length | List | Sale | Box of 6 |
|---|---|---|---|---|
| 3706 | 6" | 9.30 | 6.29 | 35.65 |
| 3712 | 12" | 10.30 | 6.79 | 38.59 |
| 3718 | 18" | 11.37 | 7.35 | 41.69 |
| 3724 | 24" | 12.42 | 7.99 | 45.25 |
| 3730 | 30" | 13.85 | 9.05 | 51.19 |
| 3736 | 36" | 15.15 | 9.95 | 56.65 |

## PONY SPRING CLAMPS

| Model | Size | List | Sale | Lots of 25 |
|---|---|---|---|---|
| 3201HT | 1" | 2.25 | 1.35 | 31.99 |
| 3202HT | 2' | 3.39 | 1.85 | 43.95 |
| 3203HT | 3' | 6.45 | 4.04 | 89.00 |
| 3204HT | 4" | 10.75 | 6.99 | 159.00 |

## PONY CLAMP FIXTURES

| Model | | List | Sale | Lots of 12 |
|---|---|---|---|---|
| 50 | 3/4" black pipe clamps | 13.10 | 7.89 | 83.99 |
| 52 | 1/2" black pipe clamps | 10.93 | 6.30 | 68.25 |

## BOSCH

| Model | | List | Sale |
|---|---|---|---|
| 1581VS | Top hdle. jig saw | 239 | 133 |
| 1582VSC | NEW CLIC Barrell jig saw | 245 | 133 |
| 1582VS | Barrell grip jig saw | 225 | 124 |
| Bosch metal case for above jig saws | | 34 | 30 |
| Bosch blade assortment for jig saws 30 of Bosch's best selling blades | | | 25.99 |
| 1942 | Heat gun 650°-900° | 99 | 75 |
| 1272D | 3"x24" belt sander w/bag | 299 | 175 |
| 1273D | 4"x24" belt sander w/bag | 315 | 182 |
| 1290D | 1/2 sheet sander w/bag | 209 | 129 |
| 11-212VSR | Bulldog 3/4"SDS rtry.drill | 339 | 195 |
| 1198VSR | 1/2" v/sp hammer drill | 229 | 135 |
| 1608 | 5.6A lam trimmer | 140 | 89 |
| 1608L | Same/above w/trim gd | 145 | 92 |
| 1609 | 5.6A offset base trimmer | 205 | 122 |
| 1609K | Lam installers kit w/1609 | 295 | 169 |
| 1601 | 1 HP Router | 165 | 105 |
| 1602 | 1-1/2 HP Router | 199 | 125 |
| 1603 | 1/2 HP D hndl router | 223 | 139 |
| 1604 | 1-3/4 HP 2 hdle router | 219 | 122 |
| 1604K | Same/above w/cs&acc. | 269 | 166 |
| 1606 | 1-3/4 HP D hdle. Router | 243 | 149 |
| 3258 | 3-1/4" planer w/blde grd | 210 | 129 |
| 3270D | 3"x21"belt sand.w/bag | 225 | 135 |
| 1273DVS | V/sp 4x24 belt sander | 339 | 189 |
| 1611 | 3 H.P. plunge router | 349 | 205 |
| 1611EVS | 3 H.P. V/sp router | 410 | 234 |
| 1651 | 7-1/4"circ.saw drop ft | 179 | 109 |
| 1654 | 7-1/4"circ. saw pvt base | 179 | 109 |
| 1632VSRK | Recip saw 8.4A orb-v/sp | 225 | 135 |
| 3050 VSRK | NEW9.6V v/sp cdls.drill w/case & 2 batteries | 235 | 135 |
| 3283DVS | NEW5" Random orbit disc sander 2.3 Amp | 159 | 119 |

## HEGNER SCROLL SAWS

| Model | | List | Sale |
|---|---|---|---|
| Multi Max 14 | var./spd. w/stand | 799 | 735 |
| Multi Max 18 | var./spd. w/stand | 999 | 819 |

## ELU BY BLACK & DECKER

| Model | | List | Sale |
|---|---|---|---|
| 3338 | 2.25 HPv/sp plunge rout | 387 | 255 |
| 3304 | 1 HP v/sp plunge router | 261 | 178 |
| 3375 | 3-1/8"univ. planer 7.2A | 280 | 188 |
| 3380 | Biscuit jointer w/case | 485 | 265 |
| 4024 | 3x21 v/sp belt sander | 289 | 195 |
| 3303 | 1 H.P. plunge router | 210 | 159 |
| 4023 | 3x21" belt sander 5.2A | 261 | 185 |
| 4029 | 4x24" belt sander 9.2A | 469 | 319 |

## BLACK & DECKER

| Model | | List | Sale |
|---|---|---|---|
| 1166 | 3/8"drill 0-2500rpm 4A | 96 | 59 |
| 2600 | 3/8"drill 0-1200rpm 4.5A | 125 | 85 |
| 1707 | 8.5"crosscut mitre saw | 813 | 449 |
| 1703 | 10"miter saw w/73-770 bld | 313 | 179 |
| 3047-09 | 7-1/4"super saw cat w/br. | 282 | 169 |
| 3048-09 | 8-1/4"super saw cat w/br. | 297 | 185 |

## BIESEMEYER FENCES

| | | | |
|---|---|---|---|
| | 50" commer. saw fence | 329 | 285 |
| | 52" homeshop saw fence | 249 | 229 |

## JET TOOLS

| Model | | List | Sale |
|---|---|---|---|
| JBS-14MW | 14" band saw 1 HP | 482 | 385 |
| JTS-10 | 10" tbl saw w/std1.5 HP | 554 | 459 |
| JTS-12 | 12" tbl saw w/std1.5 HP | 630 | 509 |
| JWS-18 | 1/2" shaper w/std1 HP | 479 | 375 |
| JJ-4 | 4" jointer, 1/2 H.P. | 310 | 285 |
| JJ-6 | 6" jointer, 3/4 H.P. | 465 | 385 |
| JWP12 | 12.5" bench plnr 2 H.P. | 569 | 379 |
| JWP12D | Dust chute for JWP12 | 45 | 22 |
| JSG-6 | 6 x 48 belt & 12"disc sander, 1-1/2 H.P. | 634 | 465 |
| OR1758 | 17"bnch drill prs.5 HP | 319 | 289 |
| OR1458F | 14"flr drill press 3/4 HP | 369 | 325 |
| OR1758F | 17"flr drill press 3/4 HP | 395 | 349 |

## RYOBI SPECIALS

| Model | | List | Sale |
|---|---|---|---|
| R500 | 2-1/4 HP plunge router | 326 | 155 |
| TS25IU | 10" miter saw | 392 | 177 |
| TS25IUS | 10" miter w/acc. kit & B&D 73-770 carb bld | 435 | 219 |
| AP10 | 10" surface planer 13A. | 820 | 358 |
| RA200 | 8-1/4" radial arm saw | 515 | 245 |
| RE600 | 3 H.P. plunge router | 398 | 215 |
| R150K | 1 HP plunge router w/cs | 206 | 105 |
| BE321 | 3x21" v/sp belt sander | 259 | 129 |
| JP-155 | 6-1/8" jointer-planer | 602 | 309 |

## PORTER CABLE

| | | | |
|---|---|---|---|
| 690 | 1.5 HP router 8A | 225 | 128 |
| 691 | 1.5 HP router D hdle | 245 | 137 |
| 536 | 1.5 HP speedmatic router | 310 | 198 |
| 518 | 3 HP 5 speed router | 560 | 338 |
| 520 | 3 HP 15A router | 510 | 315 |
| 695 | 1.5 HP router/shaper | 310 | 198 |
| 698 | H.D. shaper table | 170 | 119 |
| 351 | 3"x21"belt sand w/o bag | 225 | 128 |
| 352 | 3"x21"belt sand w/bag | 235 | 133 |
| 360 | 3"x24"belt sand w/bag | 310 | 175 |
| 361 | 3"x24"belt sand w/o bag | 290 | 169 |
| 362 | 4"x24"belt sand w/bag | 325 | 185 |
| 363 | 4"x24"belt sand w/o bag | 310 | 179 |
| 315-1 | 7-1/4" top hdle circ saw | 195 | 115 |
| 9315-1 | 315-1 comp w/cs&carb bld. | 225 | 129 |
| 617 | 7-1/4" pushhandle saw | 195 | 115 |
| 9617 | 617 comp. w/cs & carb bld. | 225 | 129 |
| 314 | 4-1/2" trim saw 4.5A | 215 | 128 |
| 9548 | X HD bayonet saw w/cs | 290 | 192 |
| 9629 | Recip saw v/sp 8A | 235 | 137 |
| 9627 | Recip saw 2 spd 8A | 225 | 128 |
| 666 | 3/8"HD vsp drill 0-1200rpm | 185 | 122 |
| 621 | 3/8"HD vsp 0-1000rpm | 155 | 95 |
| 320 | Abrasive plane 3Amp | 160 | 109 |
| 9118 | Porta plane kit 7Amp | 335 | 185 |
| 7545 | 0-2500 drywall gun 5.2A | 169 | 104 |
| 505 | 1/2 sheet pad sander | 195 | 112 |
| 7511 | 3/8" v/sp drill 5.2Amp | 185 | 115 |
| 7514 | 1/2"v/sp drill 0-750rpm | 195 | 119 |
| 537 | 1.5 HP.D hdle router | 325 | 203 |
| 7548 | Top hdl jig saw 4.8A | 230 | 129 |
| 7648 | Barrel grip jig saw 4.8A | 225 | 139 |
| 330 | Speed block sand 1/4 sht 9" | 55 | 55 |
| 555 | Plate biscuit jointer w/cs | 299 | 165 |
| 345 | 6" saw boss 9Amp | 170 | 99 |
| 9345 | 345 comp. w/cs&carb bld. | 220 | 129 |
| 100 | 7/8 H.P. router | 165 | 105 |
| 5009 | Mortise &Tenon jig | 54.95 | 49 |
| 5116 | Omni-Jig | 395 | 265 |
| 9647 | TIGER CUB recip saw | 195 | 119 |
| 9850 | 12v cordless drill w/cse. | 230 | 135 |
| 8500 | Extra 12v battery | 48 | 35 |

### NEW Tools By Porter Cable!

| | | | |
|---|---|---|---|
| 9637 | Full v/sp recip saw 8 A | 240 | 135 |
| 7536 | 2-1/2 HP 2 Hdle Router | 355 | 209 |
| 7537 | 2-1/2 HP "D" Hdle Router | 375 | 225 |
| 7538 | 3-1/4 HP plunge router | 399 | 249 |
| 7399 | 5.6A drywall cutout unit | 120 | 75 |
| 7310 | 5.6A lam trimmer | 145 | 89 |
| 7312 | 5.6A offset base lam trim. | 209 | 119 |
| 7319 | 5.6 A tilt base lam trimmer | 165 | 105 |
| 97310 | Lam Trim Kit w/std. Base, Tilt Base, Offset Base, Slitter Base, Guide & Cs | 330 | 185 |
| 7334 | 5" random orbit sander | 205 | 119 |
| 7335 | 5" Var Speed 2500-6000 rpm Random Orbit Sander | 225 | 135 |
| 7336 | 6" Var Speed 2500-6000rpm Random Orbit Sander | 230 | 139 |
| 693 | 1.5 H.P. plunge router | 280 | 165 |
| 6931 | Plunge router base | 120 | 75 |

7334K Kit includes: 7334 Sander 44350 case, w/1 roll of 100X & 150X discs

SUPER SPECIAL 149.95

| | | |
|---|---|---|
| 9505 | Commemorative Edition brushed steel special 505 pad sander w/oak case | 139 |

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# WORKSHOP MEDICAL EMERGENCY CHART

**Determine if the area is safe for you and the victim. Check the victim for life-threatening injuries such as no breathing or bleeding that won't stop, and give first aid. Call your emergency number for an ambulance. Then, give first aid for injuries that aren't an immediate threat to life.**

Prepared in cooperation with the American Red Cross

## BLEEDING

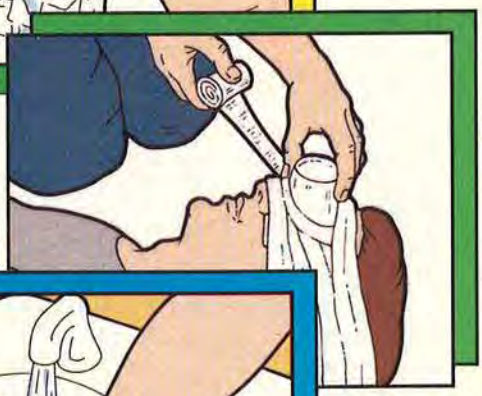
Apply direct pressure to the wound with your hand, using a sterile gauze pad, or a clean cloth. If no fracture is evident, elevate the wound. If bleeding continues, keep adding dressings and applying pressure. If bleeding does not stop, call your emergency number.

## SEVERED EXTREMITY

Control bleeding as directed above. Wrap the severed part in a moist gauze pad or cloth. Seal it in a plastic bag. Keep it cool by placing the bag in ice or ice water. Call your emergency number for an ambulance or take the severed part with you and go immediately to the hospital.

## EYE INJURIES

You usually can flush a loose object from the eye with water or blot it out with the corner of a moist, clean cloth. Do not try to remove an embedded object. Lay the injured person down. Place an inverted paper cup over the injured eye, and secure it with a bandage over both eyes.



## BURNS

Cool the burned area with cool water until pain subsides or the ambulance arrives. Cover the burn with a clean, moist dressing. Do not break blisters. Seek medical care for burns on the face, genitals, hands, feet, or a large area of the body.

## IMPORTANT PHONE NUMBERS

| |
|---|
| Emergency: |
| Doctor: |
| Surgeon: |
| Hospital: |
| Burn center: |
| Poison center: |
| Fire department: |

Illustrations: Kelly Solis-Navarro


From your friends at
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Call your local American Red Cross chapter for information about first-aid courses.

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